



The UNIVERSITY of OKLAHOMA

College of Dentistry

36th Annual

Scientific Day

April 19, 2017

Embassy Suites
Norman, Oklahoma

Sponsored by:



36th Annual Scientific Day

The first Scientific Day was held in 1981 and consisted of table clinics in the hallways of OUCOD and a few dozen donuts in the Commons. The next year, the event became more sophisticated with the addition of orange juice and coffee. We then graduated to bagels, and quickly outgrew the confines of our building. As the student research program grew and corporate support became stronger, Scientific Day evolved into what it is today – **the 36th Annual Scientific Day!**

The evolution of Scientific Day is due to the dedication and support of everyone here today. To the students and their faculty mentors who complete meaningful research projects, to all of the faculty and staff who help plan and coordinate this event, and to the many sponsors who provide funding and show us how advances in research translate into better products and services for our patients, **We Thank You!** We are particularly grateful to Delta Dental of Oklahoma, the Delta Dental of Oklahoma Oral Health Foundation, Heartland Dental and the J. Dean Robertson Society for their sponsorship of this event and our Student Research Program.

Please enjoy the outstanding projects presented here today by our dental students, dental hygiene students, residents and graduate students. We hope that you will reflect on our humble beginnings, be proud of where we are today, and help us build an even better future.

Welcome to the University of Oklahoma College of Dentistry's 36th Scientific Day!

Corporate Sponsors and Exhibitors

The following companies have provided additional funding to support this year's Scientific Day and will be exhibiting their company's products in the foyer. Please spend some time visiting the corporate sponsors to learn about their products and to thank them for their generosity.

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**Special Thanks to the Following for Generous Support of
The University of Oklahoma College of Dentistry's
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to the Following Area Businesses
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(To win a door prize you have to be present at the luncheon)

Special Thanks to the Following Individuals

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	Ms. Diana Stone

University of Oklahoma College of Dentistry
36th Annual Scientific Day

Schedule of Events

9:00 - 9:30	Registration <i>East Entrance</i>
9:00 - 10:00	Continental Breakfast <i>East Entrance</i>
9:00 - 10:30	Poster Presentations <i>Oklahoma A, B & C Ballroom</i>
10:30	Poster Votes Due In Ballot Box <i>Oklahoma Foyer</i>
10:30 - 12:00	Ishmael Essay Presentations <i>Oklahoma E Ballroom</i>
12:00	CE Forms Available <i>Registration Desk</i>
12:00 - 1:30	Awards Luncheon <i>Oklahoma F Ballroom</i>

Ishmael Essay Contest Finalist Presentations

Oklahoma E Ballroom, 10:30 - 12:00

- 10:30 a.m. Shannon Clopp (DH2)
Oral Cancer in Oklahoma: Is Smokeless Tobacco a Risk Factor?
- 10:45 a.m. Ann Coulson (DH2)
The Role of the Dental Hygienist in Orofacial Myofunctional Therapy
- 11:00 a.m. Jillian England (DH2)
Dental Hygiene Students' Temperament Types
- 11:15 a.m. Eman Khan (DS2)
Bioactivity of Dental Adhesives with Metal Oxide Nanoparticles
- 11:30 a.m. Catherine Lee (DS2)
Enhancing Quality of Care for Patients with Dementia in Dentistry
- 11:45 a.m. Shelby Steffenhagen (DS2)
Longitudinal Overbite/Overjet Changes in Primary/Permanent Dentition

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
# 1	SHANNON CLOPP (DH2) Oral Cancer in Oklahoma: Is Smokeless Tobacco a Risk Factor?
# 2	ANN COULSON (DH2) The Role of the Dental Hygienist in Orofacial Myology
# 3	JILLIAN ENGLAND (DH2) Dental Hygiene Students' Temperament Types
# 4	CORISSA LEMIEUX (DH2) Perceptions of Dentists on DTs and ADTs in Minnesota
# 5	AMANDA SEIBOLD (DH2) Oral Health Literacy, Behaviors, and Opinions of Pregnant Women
# 6	SAVANNAH STEELE (DH2) Oklahoma Hygienist's Experience with Patients Abusing Illicit Drugs
# 7	STORMY WYATT (DH2) Dental Hygiene Students' Perceptions of Their Educational Experiences
# 8	BRITTNEY BAILEY (DH2) Oral Health Care Barriers in the Foster Care System
# 9	HALEY BAKER (DH2) Managing Oral Complications of Radiation Treatment
# 10	NICOLE BLAKLEY (DH2) Non-Nutritive Sweeteners Effects on Oral Health
# 11	MEAGAN BURNS (DH2) Oral Manifestations of Sjögren syndrome
# 12	WHITNEY BYERLY (DH2) Botox: Expanding the Scope of Practice in Dentistry

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
# 13	TABITHA CRAMER (DH2) The Use of Antibiotics in Dentistry: Rx for Concern?
# 14	TAYLOR FAULKENBERRY (DH2); ALEXA RUSHING (DH2) School-Based Oral Health Programs
# 15	BRIANDA GONZALEZ (DH2); NATALIA MIGLIACCIO (DH2) Stretching Our Knowledge.....Marfan and Ehlers-Danlos Syndromes
# 16	SYDNEY HOELTING (DH2); SAWYER PINKLEY (DH2) The Role of <i>Porphyromonas gingivalis</i> in Systemic Health
# 17	VALERIE MYERS (DH2) STOP-BANG, OSA
# 18	DAVID NGUYEN (DH2) Fixed Orthodontic Lingual Retainers are not an Invention by the Devil!
# 19	YNHU NGUYEN (DH2) The Implications of Socioeconomic Status on Oral Health
# 20	CHRISTIAN PAK (DH2) Electronic Cigarettes and Dental Hygiene
# 21	PRIYA PATEL (DH2); JESSICA SANCHEZ (DH2) Access to Dental Care: Hispanics in the U.S.
# 22	SARAH PAXTON (DH2) Hurler Syndrome and the Oral Cavity
# 23	KAMARA PAYE (DH2); CIARA DORRIS (DH2) Preventing Early Childhood Caries: Is A12 the Answer?
# 24	JULIA PEREZ (DH2) Hidden Danger: Halitosis and Health

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
# 25	ACE'LEE PITTMAN (DH2); PAIGE WAY (DH2) Addressing the Oral Health Disparities of Native Americans
# 26	RACHEL RICE (DH2) Treatments of Temporomandibular Joint Disorders
# 27	MORGAN ROBERTS (DH2); JORDAN MOORE (DH2) Bridging the Gap: Collaborating to Improve Maternal Oral Health
# 28	BRECCA ROBERTSON (DH2) A Silver Lining: Caries Control and SDF
# 29	BRYANNA ROGERS (DH2); BAILEY GENTRY (DH2) Behind Bars
# 30	MEGAN WHITLEY (DH2) The Effects of Cigarette Smoking on the Oral Cavity
# 31	LYDIA WOLFENKOEHLER (DH2) Is Water Fluoridation Going Down the Drain?
# 32	PRIYANKA AGRAWAL (DS3) Multiple Instrumentations of J-shaped Canals Using Three Ni-Ti Systems
# 33	UZMA HAJIYANI (DS2) Arch Width Changes from Primary to Permanent Dentitions
# 34	EMAN KHAN (DS2) Bioactivity of dental adhesives containing metal oxide nanoparticles
# 35	KAITLIN POLK (DS4) Longitudinal Arch Perimeter Change from Primary to Permanent Dentition
# 36	BYRON SCHROEDER (DS3) Longitudinal Assessment of Arch Lengths and Palatal Height
# 37	SHELBY STEFFENHAGEN (DS2) Longitudinal overbite/overjet changes in primary/permanent dentition

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
# 38	LYNNA VAN (DS2) Variables influencing tensile strength in orthodontic elastomerics
# 39	CATHERINE LEE (DS2) Enhancing quality of care for patients with dementia in dentistry
# 40	NISHITA PHILIP (DS3) Treatment of a mandibular molar with cast dowel core and a FCG crown
# 41	KELLEY CARLSON (Postgraduate) To Determine the Reproducibility of Three Centric Relation Records
# 42	WHITNEY ROCHELLE (Postgraduate) CR/CO Discrepancy Impact on Orthognathic Surgery Treatment Planning
# 43	DANIEL SZALAY (Postgraduate) Inadequate Mandibular Incisor Decompensation in Orthognathic Surgery
# 44	CLAY ALGEO (Postgraduate); BRYAN BLANKENSHIP (Postgraduate) A Clinical Technique of Functional Impressions and Denture Fabrication
# 45	ABDULWAHAB ALKANDARI (Postgraduate) Treatment of multiple recession with tunneling technique
# 46	MOHAMMED FELEMBAN (Postgraduate) Esthetic Transitional Fixed Partial Denture Following Extraction
# 47	TAYLOR FIELD (Postgraduate) A Clinical Approach to Full Mouth Rehabilitation
# 48	JOSHUA GRESEHOVER (Postgraduate) Juvenile Mandibular Chronic Osteomyelitis: A Case Report
# 49	LAUREN KLAUS (Postgraduate) An Innovative Technique to Maximize Esthetic Outcomes in Implants

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
# 50	SCOTT THAYER (Postgraduate); BEHNAM MINAVI (Postgraduate) Comparing the Value and Diversity of CEREC to Conventional Methods
# 51	TRACEY WHITLEY (Postgraduate) Reconstruction of the Posterior Mandible with Autogenous Block Graft
# 52	MARIANA REIS (Postgraduate) The effects of plasma-deposited thin films on restorative materials

Title: Oral Cancer in Oklahoma: Is Smokeless Tobacco a Risk Factor?

Presenter(s): Shannon Clopp, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Background: Incidences of oral cancer have increased worldwide with late-stage diagnosis being common. The role of smokeless tobacco (ST) use as an etiological factor is unclear. Published studies linking ST to carcinomas are limited and inconclusive.

Purpose: The purpose of this study was to investigate a biopsy service to determine the most frequently occurring diagnoses of the biopsies that dentists reported ST by the patients.

Methods: A quantitative, retrospective study was conducted utilizing data from the biopsy reports from 2007-2016 at the University of Oklahoma Oral/Maxillofacial Pathology Lab. The search was limited to reports that had ST use and involved relevant oral sites. Two hundred forty-seven reports were reviewed and the diagnoses tallied. Twenty-five reports had more than one diagnosis.

Results: Following are the diagnoses:

- n=1 (0.4%) Verrucous carcinoma
- n=3 (1%) Squamous cell carcinoma
- n=15 (6%) Lichen planus or lichenoid inflammation
- n=32 (12%) Dysplasia (12% mild and 1% mild-to-moderate)
- n=221 (81%) Hyperkeratosis

Conclusion: The results from this study align with previous studies in suggesting a link between smokeless tobacco use and oral carcinoma is inconclusive. Data was not available to determine if the carcinoma diagnoses was previous dysplasia or hyperkeratosis biopsies. Further research should be done to follow whether the same patients progress from benign to malignant biopsies.

This study was supported by a grant from the Delta Dental of Oklahoma Oral Health Foundation. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: The Role of the Dental Hygienist in Orofacial Myology

Presenter(s): Ann Coulson, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this study was to determine the dental hygienists' roles as trained orofacial myologists. Their scope of practice was examined along with determination of their referral sources.

Methods: Certified Orofacial Myologists (COM), registered dental hygienists (RDH) and members of the International Association of Orofacial Myology (IAOM) in the United States were surveyed. Sixty-four individuals were sent an 18-item questionnaire. Questionnaires were quantitatively analyzed and open-ended questions were qualitatively reviewed.

Results: There was a 35.93% (N=23) response rate to the survey. Participants reported providing the following therapies: habit elimination n=22 (96%); mini-myo program for young children n=19 (83%); orofacial myofunctional n=23 (100%); TMD and special needs n=20 (87%); and cosmetic muscle toning for facial fitness n=11 (49%). The majority of referrals were indicated as orthodontists with n=10 (44%).

Conclusion: The respondents reported using therapies within the scope of a COM according to the IAOM and extended the hygienists' traditional scope of practice. Patients were primarily referred by orthodontists. Participant RDHs in general offices spend more time practicing dental hygiene than RDHs in specialty offices who were able to practice more as a COM.

Clinical Implications: The role of the dental hygienist may be expanded with training and is beneficial in interprofessional collaborative treatments of patients with orofacial myofunctional disorders.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Dental Hygiene Students' Temperament Types

Presenter(s): Jillian England, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this study was to determine personality temperaments in first year dental hygiene students.

Methods: Dental hygiene directors of accredited dental hygiene programs in the southwest United States were asked to forward the 4 lenses temperament assessment to their first year dental hygiene students. A consulting and training company was used to deliver the assessment and store the results. This assessment designated a color scheme to each individual's personality using the colors Gold, Green, Blue, and Orange. The colors each represent distinct personality characteristics.

Results: A total of 52 students (N=52) completed the assessment. Results showed the color gold as predominant among the first year dental hygiene students. The second color was blue. Characteristics of gold temperaments include consistent, stable, detail-oriented, and analytical. Characteristics of blue temperaments include passionate, people-oriented, and the desire to better the world and the people in it.

Conclusion: Understanding the temperaments of dental hygiene students has the potential to benefit future and current dental hygiene students. Some dental employers utilize temperament scales to match compatible personalities for their work environments. There is great potential for the benefits of the recognition of personality temperaments in the dental hygiene profession.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Perceptions of Dentists on DTs and ADTs in Minnesota

Presenter(s): Corissa Lemieux, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this pilot study was to determine how dentists in Minnesota perceive dental therapist and advanced dental therapists.

Methods: A 10-item survey was mailed to a purposive sample of Minnesota dentist working in clinics with Dental Therapists (DTs) and Advanced Dental Therapists (ADTs). Dentists were asked about experiences working with this workforce model. They identified expanded functions that the therapists performed in their clinics. Likert scale and multiple select questions were used to identify duties and perceptions of DTs and ADTs.

Results: Seven out of 38 surveys were returned (18.4% return rate). Four dentists reported working with a DT, 1 reported working with an ADT, and 2 reported working with both an ADT and a DT.

For those working with ADTs (n=3), dentists reported an average of 9 (strongly agree) that working with an ADT allows them to have more time to perform complex procedures. Duties regularly performed by the ADTs were also reported.

For the 6 dentists reported working with a DT, the average support for the idea of DTs prior to the model being implemented in Minnesota was 8.5 (moderately/ strongly agree). Eighty- three percent (n=5) of dentists reported a 10 that the expanded duties of a DT were beneficial in increasing productivity in the office. One hundred percent of responding dentists reported a 10 (strongly agree) that the DT model helps improve access to care and recommended DTs be implemented as a work-force model in other states. Duties regularly performed by the DTs were also reported.

Conclusion: This preliminary pilot study suggests that ADTs and DTs are an integral, productive member of the dental team. Importantly, these practitioners may help to expand access to care to underserved populations.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Oral Health Literacy, Behaviors, and Opinions of Pregnant Women

Presenter(s): Amanda Seibold, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this study was to assess the oral health literacy and oral health self-care behaviors of pregnant women in Oklahoma. This study was intended to help determine gaps regarding oral health knowledge and opinions of expectant mothers and what the focus of oral health education should be.

Methods: Paper form surveys with letters of informed consent were distributed to pregnant women at a pregnancy center in Oklahoma. The participants remained anonymous and surveys were returned to a locked box. The survey contained a total of 30 questions, including questions about the participant's demographics, pregnancy characteristics, dental care, oral health literacy/knowledge, and other questions regarding dental care during pregnancy. The survey results were analyzed with descriptive statistics. Open-ended questions were qualitatively reviewed.

Results: Twenty-four surveys were completed. Over 83% of participants responded that a dental or medical professional had not spoken to them about dental care while pregnant or oral health care for an infant or toddler. Although 83% ($n = 20$) responded that they trust dental professionals to be prepared and educated to treat pregnant patients, a lesser amount, only 67% ($n = 16$), were not concerned that dental treatment is too risky for pregnant women. Of the 11 oral health literacy and knowledge questions, the overall combined average was 66% correct. All participants (100%, $n = 24$) answered two or more questions incorrectly.

Conclusions: Pregnant women do have some knowledge about oral health, but there are areas that could be significantly improved through education. Some pregnant women still have doubts about dental appointments while pregnant. There is a significant need for more oral health education for pregnant women.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Oklahoma Hygienist's Experience with Patients Abusing Illicit Drugs

Presenter(s): Savannah Steel, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this study was to assess Oklahoma dental hygienists knowledge of identifying oral manifestations of methamphetamine, cocaine, and marijuana and their comfort level in treating these patients.

Methods: Surveys were handed out to 58 Oklahoma dental hygienists at a continuing education course at the annual Oklahoma Dental Hygiene Association. Surveys were completed and picked up in person. Survey questions included awareness level of oral manifestations of illicit drugs, comfort level in treating patients with illicit drug abuse, and the location hygienists obtained their knowledge of the subject.

Results: A total of 58 (N=58) hygienists completed the survey. Oklahoma dental hygienists were asked to rate their awareness level of the oral manifestations on a scale of 1-5. Hygienists were mostly aware of the oral manifestations of methamphetamine (n=3.86). When reporting confidence level in treating patients abusing illicit drugs, 10% (n=6) reported very confident, 64% (n=37) reported somewhat confident, and 26% (n=15) reported not confident. An overwhelming majority of the hygienists reported receiving their knowledge on oral manifestations of these drugs in dental hygiene school (n=46) compared to journals, webinars, continuing education, or other.

Significance/Conclusion: The results from this study indicate dental hygienists are more aware of the oral manifestations of methamphetamine than cocaine or marijuana. This could be due to more information being readily available regarding methamphetamine. The results of hygienists awareness level of oral manifestations of these drugs combined with the results of hygienists comfort level in treating these types of patients indicate further research needs to be available to dental hygienists to help fill this gap.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Dental Hygiene Students' Perceptions of Their Educational Experiences

Presenter(s): Stormy Wyatt, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this study is to determine the perceptions of first year students that attend accredited dental hygiene programs in the southwest region of the United States to determine their perceptions of what contributed to their first year success in the programs.

Methods: A 17-item questionnaire was electronically sent through OUHSC Qualtrics to 33 accredited dental hygiene program directors in Arizona, New Mexico, Oklahoma, and Texas. This sample of convenience utilized descriptive statistics to analyze survey data, while open-ended questions were qualitatively reviewed.

Results: One hundred nine senior dental hygiene students completed the questionnaire (N=109). Perceptions indicated that students learned from clinical and didactic mistakes, and that they were satisfied with clinical instruction provided. Students often disagreed when asked whether they received adequate rest, a healthy diet and exercise regimen, or interprofessional collaboration opportunities. Perceived improvements to the DH program primarily focused around a common desire to decrease course workload, increase faculty calibration, and increase faculty to student ratio. Students described a drastic intensification in study habits and recognized the need to develop strong study habits.

Conclusion: Additional studies should be conducted to determine successful ways to properly calibrate faculty. Studies also need to be conducted to evaluate coursework within hygiene curriculum and study the benefits that an all year dental hygiene program could provide.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Oral Health Care Barriers in the Foster Care System

Presenter(s): Brittney Bailey, DH2

Advisor(s): Lydia Snyder, Tammie Golden

Abstract:

Purpose: The purpose of this literature review is to examine dental service barriers that foster care children experience and reveal differences between foster care children and their peers of the same socioeconomic status and demographic area.

Background: Children in the foster care system are at higher risk for: dental trauma, oral habits, physical, mental, and sexual abuse, use of psychotropic medications, truancy and increased rates of hospital utilization compared to their peers.

Significant Findings: Prior to being placed in foster care, most children have little or no dental encounters. After placement, foster care children have more barriers receiving dental care compared to their peers.

Conclusion: Dental care barriers can lead to children having unmet dental needs. The combination of unmet dental needs and an irregular environment place foster care children at a higher risk for a diminished overall well-being. Dental professionals are trained to recognize signs of abuse and report accordingly. It is imperative that hygienists maintain this training throughout their career in order to improve quality of life and oral health care delivery for children in foster care.

Title: Managing Oral Complications of Radiation Treatment

Presenter(s): Haley Baker, DH2

Advisor(s): Melissa Stutzman

Abstract:

Purpose: The purpose of this literature review is to educate dental professionals on the importance of recognizing and managing oral complications of radiation treatment.

Background: The American Cancer Society has estimated that about 1,688,780 new cancer cases will be diagnosed and 600,920 cancer deaths will occur in the United States in 2017. That is approximately 1,650 deaths every single day. Radiation is one of the most commonly used options for cancer treatment. Radiation can be defined as the process of transmitting energy in the form of electromagnetic waves or high-energy particles that result in ionization. According to the Cancer Treatment Centers of America, radiation is a targeted therapy used to kill harmful cancer cells, reduce the size of tumors, or to decrease advanced cancer symptoms.

Significance: Although radiation can be very beneficial in the treatment of head and neck cancers, there are many complications that can affect the oral cavity. The oral complications of radiation treatment can include mucositis, xerostomia, dysgeusia, radiation caries, and osteoradionecrosis of the jaw. Dental professionals are heavily relied upon to help patients manage these oral complications caused by radiation treatment targeting head and neck cancers.

Conclusion: Dental professionals should be highly educated on the detection and treatment options for managing oral complications of radiation treatment. We need to be able to educate cancer patients of all possible signs and symptoms of oral mucositis, xerostomia, dysgeusia, radiation caries, and osteoradionecrosis of the jaw. Early detection through extraoral and intraoral examination is crucial to prevent more painful and invasive complications. Dental professionals have an extremely important role when managing radiation patients' painful experience to better their quality of life throughout their fight against cancer.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Non-Nutritive Sweeteners Effects on Oral Health

Presenter(s): Nicole Blakley, DH2

Advisor(s): Marla Holt

Abstract:

Purpose: The purpose of this literature review is to educate dental professionals on the importance of non-nutritive sweeteners pertaining to a patient's oral health.

Background: Non-nutritive sweeteners are high-intensity sweeten compounds that range from 180-13,000 times sweeter than sucrose. Sweeteners are added to a variety of food and drink products. The past 3 decades have shown a significant growth in non-nutritive sweeteners among society. Between 1999-2008, non-nutritive sweeteners consumption increased from 26.9% to 32% in adults and 8.7% to 14.9% in children. The worldwide market for sweeteners is estimated to reach 2.2 billion dollars by the year 2020 as it continues to grow annually by 5.1% per year.

Significance: Non-nutritive sweeteners have beneficial roles ranging from prevention in dental caries to sweetening oral hygiene products. Although found beneficial in dentistry, sweeteners may also have a harmful effect on the systemic health.

Clinical Implications: Non-nutritive sweeteners when found in the oral cavity show little to no significant drop in pH, are found to be bacteriostatic inhibiting *S. mutans*, and present a lower percentage of demineralization.

Conclusion: Non-nutritive sweeteners are still highly controversial among health professionals. As they continue to play a large role in food and beverage production, continuous efforts to study sweeteners are at an increase. For dental professionals, it is important to recognize the benefits and harms of sweeteners. As non-nutritive sweeteners have been found to have a positive affect in dentistry, it is still unclear of the harmful affects that they may have systemically. Therefore, it is important to recognize that limitations must be kept in mind.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2017.

Title: Oral Manifestations of Sjögren syndrome

Presenter(s): Meagan Burns, DH2

Advisor(s): Marla Holt

Abstract:

Purpose: The purpose of this literature review is to raise awareness of the oral manifestations of Sjögren syndrome and the available treatment that can be provided by dental professionals

Background: Sjögren syndrome is an autoimmune disease. This disease attacks the immune system, especially the body's secretory or exocrine glands, most commonly the lacrimal and salivary glands. Women are affected more commonly than men in a 9:1 ratio. Approximately 3 million Americans are affected with Sjögren syndrome, typically individuals over fifty years of age. An individual can have this autoimmune disease for 5 or more years before being diagnosed.

Significance: Saliva plays a crucial role in swallowing, speech, taste, oral cleansing, and digestion. Approximately 75% to 92% of Sjögren syndrome patients have a complaint of xerostomia. Xerostomia leads to many other oral complications such as: dental erosion, dental caries, mucosal friability, dry lips, angular cheilitis, fissured tongue, cobblestone-like appearance of the tongue, mucositis, ulcers, candidiasis, halitosis, and oral infections due to lack of antimicrobial properties of saliva. Although there is no cure for Sjögren syndrome, many treatments are available to decrease the effects that this autoimmune disease has on the oral cavity.

Conclusion: Oral manifestations of Sjögren syndrome can be detrimental to the patient's overall health. Dental professionals play an important role in the diagnosis and treatment of Sjögren syndrome due to xerostomia being one of the dominant oral effects of Sjögren syndrome.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2017.

Title: Botox: Expanding the Scope of Practice in Dentistry

Presenter(s): Whitney Byerly, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To explore the uses of Botox and dermal fillers in Dentistry.

Introduction: In 2015 the American Society for Aesthetic Plastic Surgery reported that Botox and hyaluronic acid made up nearly half of the 12 million combined surgical and non-surgical aesthetic procedures. Since 2011, both Botox and hyaluronic acid procedures have doubled. Dentists are among a select group of medical professionals that can receive training to administer Botox and dermal fillers. Botox can also be utilized to treat numerous conditions related to dentistry, making dentists the preferred clinician for administration in many states. Botox acts to lessen muscle movement while dermal fillers help to add volume to the area, earning it the top spot for minimally invasive cosmetic procedures with added therapeutic benefits.

Significance to Dentistry: Botox is used to arrest pain and decrease muscle movement in patients with temporomandibular disorders, as well as, migraine sufferers. Patients with excessive gingival display are often presented with Botox as an alternative treatment to invasive surgery. Botox and dermal fillers can also be utilized in the treatment of black triangles/open interdental space. Numerous treatment options for the head and neck region make Botox a new phase in the scope of practice in dentistry.

Conclusion: Gaining popularity throughout the years, Botox and dermal fillers have become a hot commodity in the dental world. As more states aim to provide training and licensing for dentists, these procedures will continue to increase.

Title: The Use of Antibiotics in Dentistry: Rx for Concern?

Presenter(s): Tabitha Cramer, DS2

Advisor(s): Tammie Golden

Abstract:

Introduction

Antibiotics are widely used throughout healthcare to prevent or fight off bacterial infections and are the second most common group of drugs prescribed in dentistry. In dentistry, antibiotics are used prior to dental appointments to prevent infection or used therapeutically to treat an existing infection.

Background

There are two different spectrums of antibiotic agents used in dentistry, narrow and broad spectrum antibiotics. Too often antibiotics are prescribed unnecessarily which contributes to what is known as antibiotic resistant bacteria. Bacterial resistance occurs when a microorganism is resistant to an antibiotic drug for the purpose of treating an infection.

Significance

Bacterial resistance is one of the most urgent problems in healthcare today. However, antibiotic resistant bacteria is not the only problem arising from the abuse of the antibiotics. Although commonly recognized in medicine and hospital settings, more recently, Clostridium difficile infections have been reported in dentistry as well.

Purpose

The purpose of this literature review is to examine the over use of antibiotics in dentistry, and consider ways in which prevention of adverse outcomes can be achieved.

Title: School-Based Oral Health Programs

Presenter(s): Taylor Faulkenberry, DH2; Alexa Rushing, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Goal/objective: The goal of this community health project was to reduce childhood caries in permanent molars of the student body at Positive Tomorrows. The objective for the project was to perform sealant placement on the eligible/prescribed teeth for the children participating in the school sealant programs.

Methods/Materials: The students of Positive Tomorrows, who were previously seen by dental students on the Mobile Dental Van, were the target population. Supervising dentists assessed the needs for the students enrolled in the Mobile Smiles program.

Results: The following oral health programs were addressed in this school-based project: 38 permanent molars received pit and fissure sealants, 14 children received prophylaxis, 14 fluoride varnish treatments were administered.

Conclusions: Outcomes of the program demonstrated 90% successful retention rate of the sealants placed. Ten percent failure rate was due to saliva contamination. Healthy People 2020 goal for sealant programs is to increase the school based oral health programs, and this project illustrates such a program.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Stretching Our Knowledge.....Marfan and Ehlers-Danlos Syndromes

Presenter(s): Brianda Gonzalez, DH2; Natalia Migliaccio, DH2

Advisor(s): Tina Tuck

Abstract:

Purpose: The purpose of this literature review is to inform dental professionals of the importance of rare connective tissue disorders, such as Ehlers-Danlos and Marfan Syndrome.

Background: Connective tissue composes the framework of the body to provide support and protection of vital organs. Collagen is a structural protein found in connective tissue that accounts for 70% of the body. Ehlers-Danlos Syndrome (EDS) and Marfan Syndrome (MFS) are hereditary connective tissue disorders that are the result of defective collagen. Both disorders are categorized by a variety of clinical signs and symptoms. In most cases EDS exhibit signs of hyper elastic skin, fragile tissues and excessive joint flexibility. MFS presents with increased flexibility of ligaments resulting in joint laxness, hyper sensibility, and high risk of injury.

Clinical Implications: Patients with EDS and MFS are at a higher risk for exhibiting inadequate oral health and hygiene. Due to physical limitations, patients presented with increased bacterial plaque which is the primary risk factor of gingivitis. Both disorders display common anomalies including root resorption, pulp calcifications and obliterated pulp canals. These defects could potentially cause problems for dental procedures. EDS and MFS patients should carefully consider orthodontic treatment. In both cases, accelerated tooth movement and tooth mobility have been reported. Due to defective collagen in the PDL, orthodontic movement can be hazardous if treatment is not modified. In addition to clinical findings, the systemic system can also be affected.

Significance: Patients with EDS and MFS may require altered dental treatment; including modifications in oral hygiene techniques, prophylaxis, endodontic and orthodontic treatments. In order for a patient to be diagnosed and treated, oral health professions should be familiar with the EDS and MFS.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2017.

Title: The Role of *Porphyromonas gingivalis* in Systemic Health

Presenter(s): Sydney Hoelting, DH2; Sawyer Pinkley, DH2

Advisor(s): Melissa Stutzman

Abstract:

Purpose: The purpose of this literature review is to examine the relationship of *Porphyromonas gingivalis* and systemic diseases such as atherosclerosis, rheumatoid arthritis and adverse pregnancy outcomes.

Background: The CDC states that periodontitis affects more than half of Americans over the age of thirty. *Porphyromonas gingivalis*, a major bacterium associated with chronic periodontitis if left uncontrolled in the oral cavity has the ability to infiltrate into other areas of the body, such as arterial walls and synovial joints. Previous and current studies have examined *Porphyromonas gingivalis* and its role in aiding in the etiology, progression and acceleration of a variety of diseases.

Significance: *Porphyromonas gingivalis* is a Gram-negative obligate anaerobe that readily adheres to the epithelial lining of the periodontal pocket. *P. gingivalis* is able to enter the bloodstream and travel to specific areas of the body and cause a progression or acceleration in systemic inflammation. *P. gingivalis* is the only bacteria known to cause the PPAD enzyme, an enzyme that triggers the process of Rheumatoid arthritis. In atherosclerosis, the presence of *P. gingivalis* accelerates the accumulation of lipid plaques, which initiates a chronic inflammatory process that could lead to cardiac diseases such as congestive heart failure.

Conclusion: Adequate oral hygiene and control of oral bacteria through prophylaxis and in advanced cases non-surgical periodontal therapy of scaling and root planing can decrease the risk of acquiring or advancing these prominent diseases and conditions.

Title: STOP-BANG, OSA

Presenter(s): Valerie Myers, DH2

Advisor(s): Donna Wood

Abstract:

Purpose: The purpose of this literature review is to inform dental professionals of their role in helping to identify patients with obstructive sleep apnea.

Background: Approximately 18 million people suffer with obstructive sleep apnea (OSA), with only about 15% of those people have been diagnosed. Since people may visit the dentist more frequently than the physician, they most likely spend more time with the dental hygienist than the dentist. Dental offices can be the first line of defense to diagnose OSA and bring awareness to patients that may have it. **Clinical Implications:** OSA can be screened in the dental office by the staff when trained properly. Dentists are equipped to educate their staff regarding the signs and symptoms of OSA. When updating patients medical records, the dental hygienist should inquire about a history of GERD, headaches, insomnia, bruxing, nicotine and alcohol use. When assessing the patient orally, linea alba, scalloped tongue, erosion on the teeth, wear on the lower incisors, or a vaulted palate may be present. Hygienists can also use the acronym STOP-BANG for identifying patients that may be suffering from OSA. STOP-BANG stands for Snoring, Tiredness, Observation by others, blood Pressure, BMI, Age, Neck circumference, and Gender. There are 4 classifications for OSA, depending on the severity.

Conclusion: Creating an awareness of OSA is an important role for the dental professional. Patients should be screened for OSA when seeking preventive care in a dental office as part of the first line of defense.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Fixed Orthodontic Lingual Retainers are not an Invention by the Devil!

Presenter(s): David Nguyen, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review was to investigate possible detrimental oral effects resulting from fixed retainer appliances on post-orthodontically treated patients.

Background: The demand for the prevention of teeth migration after orthodontic treatment with little to no compliance from the patient lead to the creation of permanent lingual retainers. With the placement of these retainers the results of retention increased. Research suggests that utilization of retainers attached to each consecutive tooth was more successful than lingual bars attached to only canines. Studies have observed association between changes of gingival health with the implementation of permanent lingual retainers such as, increased gingival recession and inflammation. The causes of these changes correlate with the retainers increase susceptibility for biofilm and calculus accumulation. Comparisons between different types of retainers were observed and also the roles with the time-span or duration in which retainers are placed.

Clinical Significance: Professional and oral self-care on patients with fixed retainers is less effective. Gingival health is compromised as a response to less effective biofilm removal. The problem lies with the increased difficulty with cleaning the areas the lingual retainer is attached to. Having decreased cleansing of those areas will result in the greater accumulation of biofilm and calculus. Motivational interview and education on how to ease the steps of proper cleaning of the lingual retainer area will help decrease findings of plaque, calculus, and gingival inflammation.

Conclusion: Gingival recession is largely in response to orthodontic treatment rather than lingual retainers. Lingual retainers contribute to ineffective self-care. Increased biofilm contributes to periodontal disease. Dental professionals need to be knowledgeable about how to motivate and educate their post-orthodontically treated patients in order to maintain oral health.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: The Implications of Socioeconomic Status on Oral Health

Presenter(s): Ynhu Nguyen, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review and poster is to educate dental professionals on the impact of socioeconomic status (SES) on oral health.

Background: The 3 predominate determinants of socioeconomic status are income, education, and occupation. Social and economic factors are barriers in attaining dental resources and have restricted access to care. A considerable distribution of the population faces complications in accessing oral health care due to financial barriers that are indicative of people in the lower socioeconomic level.

Significance: Low SES is more often affiliated with high incidences of oral disease, poorer oral health behaviors, less frequency of dental attendance, lower level of dental knowledge and lower perception of dental self-care. People with social and economic disadvantages face greater difficulties in receiving access to services and knowledge about dental behaviors that notably affects their oral health. They also partake in more risky oral health behaviors that create social gradients in regards to health.

Conclusion: Cultural, social, and economical competence among professional healthcare workers needs to be in place in order to countermand variants in oral health. Those who face financial, educational, and occupational barriers should have the right to access of care despite disparities. Policies and practices need to be made to accommodate socioeconomic adversities regarding dental health to broaden the availability of care. Preventive measures should be applied to counteract future dental health issues and education should be emphasized in order to restore negative feelings and behaviors towards dentistry and health in general. Focusing on the various measures of SES sheds a light on ways to manage socioeconomic inequalities and its influence on the quality of oral health among disadvantaged populations.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Electronic Cigarettes and Dental Hygiene

Presenter(s): Christian Pak, DH2

Advisor(s): Melissa Stutzman

Abstract:

Purpose: This purpose of this literature review is to educate dental professionals on electronic cigarettes and their harmful side effects.

Background: Electronic cigarette usage is rising in popularity due to manufacturers marketing these devices as a healthier alternative to traditional cigarettes. Limited research is available on the long-term effects of electronic cigarettes. Short-term studies suggest that these devices can contribute to negative outcomes related to oral health, respiratory health, and trauma caused by device malfunction.

Clinical Implications: Dental professionals have a duty to be knowledgeable about the possible side effects associated with electronic cigarette usage. It is important for dental professionals to stay up to date on the latest research as use of these devices gain popularity. Patient education is an integral part of a patient's dental treatment.

Significance/Conclusions: Potentially dangerous chemicals used in electronic cigarettes have been identified in e-liquids. High rates of dual usage of both electronic and traditional cigarettes have also been observed. Awareness is an important foundation for dental professionals to improve patient health outcomes.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Access to Dental Care: Hispanics in the U.S.

Presenter(s): Priya Patel, DH2; Jessica Sanchez DH2

Advisor(s): Tammie Golden

Abstract:

Purpose:

The purpose of this literature review was to identify oral health care barriers of the Hispanic community in the United States.

Background:

Many Hispanics face disparities with the lack of dental coverage and insurance. Other issues of concern for this community include cultural beliefs, financial resources, low paying jobs, socioeconomic status, and language obstacles. More than 32 million Hispanics make up 14.4% of the U.S population. About one in three Hispanics have a family income below the poverty level. Medicaid is a key source of coverage for 13.7 million Hispanics, many of whom would otherwise go uninsured due to their limited access to private coverage and low incomes.

Significance:

Government and grant funded community based oral health programs that are culturally appropriate help raise awareness of issues common to the Hispanic community such as: diabetes, diet, nutrition and oral health.

Conclusion:

Promoting oral health education and implementing preventive measures is key to increasing dental health literacy. Cultural beliefs and behaviors still influence decision making and contribute to lack of essential care. As the Hispanic population continues to grow, community based oral health programs may be a viable source of intervention to promote and reduce the oral health disparities for this group in the future.

Title: Hurler Syndrome and the Oral Cavity

Presenter(s): Sarah Paxton, DH2

Advisor(s): Marla Holt

Abstract:

Purpose:

To educate dental professionals of the etiology of Hurler Syndrome and effects it can have on the oral cavity.

Background:

Mucopolysaccharidosis I (MPS I) is a genetic autosomal-recessive disorder that occurs in 1 of 100,000 live births, the most severe form termed Hurler Syndrome. Hurler Syndrome is a rare disorder that manifests in infancy. The body is unable to breakdown mucopolysaccharides, which build-up in the body, causing organ damage, skeletal malformations, and can result in death in early childhood or adolescence. The most effective treatment is bone marrow transplant therapy coupled with enzyme replacement therapy.

Significance:

Among the many deviations in body appearance and function, there is also an array of orofacial and dental findings that affect these patients' quality of life.

Clinical Implications:

Oral manifestations include: mucositis due to chemotherapy, structural defects of the mandible, macroglossia, dentigerous cysts, irregularly shaped teeth, and tracheal defects that lead to airway changes and sleep apnea.

Conclusion:

The dental team must be aware of oral manifestations that could occur in these patients and the best plan for treatment. It is with such rare and debilitating congenital conditions that all aspects of the medical community must liaise inter-professionally to reach the highest quality of care for the patient with Hurler Syndrome.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2017.

Title: Preventing Early Childhood Caries: Is A12 the Answer?

Presenter(s): Kamara Paye, DH2; Ciara Dorris DH2

Advisor(s): Tammie Golden

Abstract:

Purpose

The purpose of this literature review is to examine strategies for prevention and reduction of early childhood caries.

Background

Early childhood caries is the most prevalent childhood infectious disease and is completely preventable. Traditionally, the administration of fluoride in all its available sources has been the gold standard for preventing carious lesions. Although the use of probiotics is not new, a recent *Streptococcus* species known as A12 has been identified and is currently being researched. A12 is significant due to its ability to interfere with the growth of *Streptococcus mutans*, the harmful dental caries pathogen. A12 has a positive impact on the oral cavity flora by producing arginine as well as hydrogen peroxide (H₂O₂). Arginine works by raising the pH of the oral cavity, and is unable to be digested by bacteria. H₂O₂ works by releasing oxygen and destroying bacterial cell walls. Potentially, the use of A12 could be employed as an oral supplement in pill form.

Clinical Implications

Supplemental use of A12 in addition to fluoride could be easily administered especially to those who have a high caries risk, excluding the necessity of a health care provider.

Significance/Conclusion

Conjunctive use of the probiotic A12 supplement and fluoride could likely yield the highest benefit for populations at risk for early childhood caries. More research needs to be conducted to determine conclusive evidence that A12 is a viable alternative in preventing and reducing incidence of childhood caries.

Title: Hidden Danger: Halitosis and Health

Presenter(s): Julia Perez, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To educate dental professionals on the significance of halitosis as it relates to overall health.

Introduction: Halitosis is a common term used to describe an unpleasant or offensive odor emanating from the oral cavity, which may cause social discomfort or may indicate something else more threatening. There are two types of halitosis; general halitosis and the less common version, extra-oral halitosis. General halitosis occurs in about 90% of the cases and results from poor restorations, poor oral hygiene, and tongue anatomy. Extra-oral halitosis, also known as bloodborne halitosis, derives from gastrointestinal infections, metabolic disorders and renal disease.

Significance of Dentistry: It is important to keep in mind that halitosis can be a difficult subject to discuss with the patient. Half of the U. S. population has reported halitosis as their chief complaint, however the condition often tends to be overlooked at hygiene appointments due to the difficult nature. Also, hygienists tend to shy away from tongue cleaning during the prophylaxis appointment, which leaves the majority of the mouths bacteria undisturbed. Patients with extra-oral halitosis may not be visiting a physician regularly, making their diagnosis a life or death situation.

Conclusion: Halitosis can be a sign of something more serious and should be evaluated. Motivational interviewing is a helpful tool to utilize in order to determine the sources of halitosis. In addition to discussing signs and symptoms, hygienists should consider adding a tongue cleaner to their instrument kit in order to disrupt biofilm that is adhered to the tongues surface. A trained professional should be aware of the sources, types, the distinct odors, and the proper treatment/referral options in order to better serve patients.

Title: Addressing the Oral Health Disparities of Native Americans

Presenter(s): Ace'Lee Pittman, DH2; Paige Way, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To increase oral health knowledge and reduce decay rates in Native American children of the Chickasaw Nation.

Background: Native Americans experience more oral disease including both tooth decay and periodontal disease. In addition, 28.3% of single-race American Indians live in poverty. The prevalence of caries in Native American children is extreme and most do not have adequate access to preventive and restorative dental care. The Kingston Chickasaw Children's Village is a boarding program for Chickasaw children during the school year. Most of the children are underserved, troubled or have a poor home life and come to live at the Children's Village to avoid entering into the foster care system.

Methods: Members of the Ardmore Chickasaw Dental Clinic took mobile dental vans to the Children's Village and performed dental screenings on 41 children ranging in ages from 5-17. A comprehensive needs assessment was performed to assess current dental knowledge, hygiene practices and nutrition. Restorative needs were addressed on the mobile units and three one hour comprehensive oral health presentations were given to children of all ages.

Results: Decay was found in more than half of the children resulting in a caries incident rate of 56%. The children had limited oral health knowledge and performance in daily care. The mobile dental team treated 100% of the decayed teeth for a total treatment value of over \$20,000. Three, one hour comprehensive oral health presentations were performed, with a post-test revealing 90% accuracy. Follow-up surveys, oral hygiene products, and resources for care were distributed.

Title: Treatments of Temporomandibular Joint Disorders

Presenter(s): Rachel Rice, DH2

Advisor(s): Tina Tuck

Abstract:

Purpose-The purpose of this literature review is to update dental health professionals of treatment options for temporomandibular disorders.

Background-The temporomandibular joint, TMJ, is a synovial joint containing an articular disk that aids in opening and sliding movements. Temporomandibular disorder, TMD, is defined as conditions that affect the TMJ, jaw muscles, and facial nerves. More than 15% suffer from TMD. It has been estimated that approximately 17.8 million work days of are lost because of TMD. Theories that contribute to TMD are lack of proper occlusion, improper position of the condyle in the glenoid fossa, trauma i. e. parafunctions, occupational activities, spasms of masticatory muscles. Emotional stress can lead to stress, which puts more tension on the TMJ. Clinical studies tested the significance of several treatment options.

Clinical Implications-Maladies of the Temporomandibular Joint, TMJ, can cause discomfort in the form of pain in the facial region, improper occlusion, joint sounds, and inadequate opening of the jaw. Treatment options researched include pharmacological treatment with NSAIDS or PEA, massage therapy, splints injections of botulism toxin or corticosteroids, laser acupuncture, arthrocentesis and arthroscopic surgery, and even joint reconstruction or replacement.

Significance-With limited information concerning various treatment options, it is difficult to ascertain the appropriate treatment for patients suffering from TMD. This prompts further research to determine the effectiveness of treatments for TMD.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2017.

Title: Bridging the Gap: Collaborating to Improve Maternal Oral Health

Presenter(s): Morgan Roberts, DH2; Jordan Moore, DH2

Advisor(s): Tammie Golden

Abstract:

Purpose: The purpose of our literature review was to determine if goals established from Healthy People 2020 to improve the health and well being of women, infants, children, and families were being met. If so, were dentists, physicians and allied health personnel collaborating to achieve this goal?

Background: Perinatal and maternal oral health play an important role in the overall health of pregnant women. Many pregnant women do not realize how their own oral health can affect their pregnancy and/or their unborn child.

In conjunction with periodontal disease, high levels of cariogenic bacteria can also place the mother at greater risk for developing caries and also put their children at risk for early childhood caries.

Clinical Significance: Physicians, nurses and allied health professionals are more likely to see mothers who are expecting and their children. Performing risk assessments, identifying periodontal disease and recognizing caries, are all important factors in referral for care. Collaboration between dental professionals and other allied health professionals is essential in guiding patient care, protecting both mother and child.

Conclusion: Pregnancy offers an opportunistic time to educate these expectant mothers on oral health, self-care, and future childcare. It is essential that the health and well being of the newborn child be a priority and with the collaboration of the dentists and medical professionals, this can be achieved.

Title: A Silver Lining: Caries Control and SDF

Presenter(s): Brecca Robertson, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To educate dental professionals on the use of silver diamine fluoride (SDF) as it relates to dentistry today.

Background: SDF is a newly emerging topical dental product that is known for its cariostatic effectiveness. SDF gained final FDA approval in the United States in 2014, but has been used for over forty years in other countries. It is rendered to be most effective when applied yearly as a 38%/44, 800 ppm solution of fluoride ions.

Significance: Silver diamine fluoride has been found to arrest carious lesions in both enamel and dentin. Annual application of SDF has also shown to be more effective at caries prevention than neutral sodium fluoride applied four times per year. Silver diamine fluoride can also be used to treat dentinal hypersensitivity. The new CDT code (1354) applies to SDF as an interim caries arresting medicament application which includes conservative treatment of an active, non-symptomatic carious lesion by topical application of a caries arresting or inhibiting drug without mechanical removal of sound tooth structure.

Conclusion: SDF is a viable tool for use in many aspects of dentistry ranging from pediatric offices, rural schools, nursing homes and low-income clinics. SDF may prevent tooth loss in populations that could not otherwise afford care. Proper training of benefits, usage and application occur to avoid negative outcomes. SDF is gaining momentum as a caries medicament that is a cost effective, non-invasive tool and has great preventive potential.

Title: Behind Bars

Presenter(s): Bryanna Rogers, DH2; Bailey Gentry, DH2

Advisor(s): Lydia Snyder, Tammie Golden

Abstract:

The purpose of this literature review was to evaluate the current level of access to care and oral hygiene education to youths in a juvenile detention system. Although juvenile detention homes are widely used, in high demand and quite frequently filled with juveniles throughout the country, there is a distinct lack of aid that is given to these facilities. Because of this, it is often times the case that this juvenile population is overlooked and ignored in general provision of health assessments.

Dental decay, periodontal disease, tobacco, and illicit drug use are areas of concern among adolescents. Healthy people 2020 goals related to these topics:

- OH-1: Reduce the proportion of children and adolescents who have dental caries experience in their primary or permanent teeth
- OH-8: Increase the proportion of low-income children and adolescents who received any preventive dental services during the past year
- SA-13: Reduce past month use of illicit substances
- TU-3: Reduce the initiation of tobacco use among children, adolescents and young adults

The rates for illicit drug use and tobacco use are high among adolescents, which brings up the concern for the risk of substance abuse in their adult life and how these things will affect their overall health and well-being. Many youths that enter into a detention home lack comprehensive health care and have long term neglected health needs. Since this population is often times overlooked and ignored in the provision of health assessments, it is necessary for the detention homes to work closely with dental clinics around their area to help each adolescent receive the dental treatments that he or she needs.

Title: The Effects of Cigarette Smoking on the Oral Cavity

Presenter(s): Megan Whitley, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of the literature review was to highlight some adverse effects cigarette smoking has on the oral cavity.

Background: The CDC ranks cigarette smoking as the number one preventable cause of premature death in the US. Cigarette smoke is implicated with more than sixteen million Americans having some form of disease. Smoking is also a major risk factor associated with periodontal disease and oral and pharyngeal cancers. Smoking is associated with an increased incidence of tooth loss, dental caries, gingivitis, implant failure, poorer response to periodontal therapy, and a wide array of gingival and mucosal alterations.

Significance to Dentistry: With all of the known risk factors and adverse health effects associated with cigarette smoking, the dental professional needs to have a good understanding of how to be effective when discussing tobacco cessation with their patients. The extra-oral and intra-oral examination is another crucial step of the patient assessment that should be completed on every patient at every appointment and not just completed on new patients. The dental health care provider also needs to be conscious that cigarette smoke can suppress bleeding and inflammation and lead to improperly identifying a patient's level of disease present. In addition the dental professional should inform a patient having or thinking of having implants placed, that smoking will increase the risk of the implant failure.

Conclusions: Dental professionals can play a key role in educating, motivating, and providing resources to their patients for tobacco cessation. With increasing evidence linking cigarette smoking to detrimental overall and oral health effects the dental professional should be cognizant of how to provide their patients with the tools to improving their overall quality of life.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2017.

Title: Is Water Fluoridation Going Down the Drain?

Presenter(s): Lydia Wolfenkoehler, DH2

Advisor(s): Donna Wood

Abstract:

Purpose: The purpose of this literature review is to educate dental professionals on the positive and negative effects that community water fluoridation has on oral and systemic health.

Background: Fluoride is a naturally occurring mineral that has been added to U.S. public water supplies since 1945. Research has shown fluoride to be a safe and cost effective preventative measure to dental caries. The U.S. Public Health Service regulates community water fluoridation (CWF) and maintains the optimal fluoride levels in water stay between .07-1.2 milligrams per liter in order to provide maximum protection against caries, while also limiting possible adverse health concerns. Despite the benefits CWF has on oral health, there is support for an anti-fluoridation movement that claims fluoride is a toxin responsible for multiple adverse systemic health issues.

Significance: Dental caries is the most common, transmissible, irreversible and chronic disease reported in both children and adults. Fluoride inhibits the spread of dental caries by halting the demineralizing activity of metabolizing carbohydrates through the remineralization of enamel crystalline of the teeth. The mineral is found in many dental products such as toothpaste, mouthrinses and topical treatments. Research suggests that CWF is the most effective way to stop carious lesions from forming, providing a means of prevention to lower socioeconomic class populations. Adverse health concerns surrounding CWF are fluorosis, which can range from slight discoloration to severe pitting of the enamel, as well as osteosarcomas and neurologic abnormalities. There are also toxicity concerns regarding the manufacturing of fluoridated water in treatment plants.

Conclusion: Since CWF is heavily debated, it is important dental professionals fully understand the role water fluoridation has on oral health in order to educate their patients and communities regarding the risks and benefits of this issue.

Title: Multiple Instrumentations of J-shaped Canals Using Three Ni-Ti Systems

Presenter(s): Priyanka Agrawal, DS3

Advisor(s): Suhair Jambi, Sharukh Khajotia

Abstract:

Objectives: The objective of this study was to measure the effect of multiple instrumentations with the same rotary file on the angle of simulated J-shaped canals in resin blocks, and compare changes in canal angle by different Ni-Ti rotary systems.

Methods: Sixty resin blocks with simulated canals of mild curvature (Endo Training Bloc; Dentsply Maillefer, Switzerland) were divided and instrumented with three file groups: Vortex Blue, ProTaper Next X2, and Profile Vortex (Dentsply Tulsa Dental Specialties, USA). Digital images of the blocks were taken before instrumentation (I0) and after three successive instrumentations (I1 through I3) with an Olympus SZX-12 stereomicroscope and Spot digital camera. Images were compared for transportation in terms of change in canal angle using the Schneider method and Image J software. Mean canal angle produced by each file group, and change in canal angle between successive instrumentations ($D1 = I1 - I0$, $D2 = I2 - I1$, and $D3 = I3 - I2$) were individually analyzed using Repeated Measures ANOVA tests (SAS software; $\alpha=0.05$). One-factor ANOVA was used to determine differences in canal angle among the file groups at each instrumentation ($\alpha=0.05$).

Results: The results of the Repeated Measures ANOVA demonstrated a statistically significant interaction between successive instrumentations and file group on mean canal angle ($p= 0.047$). The number of instrumentations, and the file group tested, produced statistically significant differences in change in canal angle ($p < 0.0001$ and $p= 0.0135$, respectively). There was, however, no statistically significant difference among the mean canal angles of the three file groups at each instrumentation cycle ($p > 0.05$).

Conclusions: Each file group produced different mean canal angles at each successive instrumentation. The amount of transportation decreased after successive instrumentations, and varied within each file group.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the 2017 IADR/AADR General Session and Exhibition.

Title: Arch Width Changes from Primary to Permanent Dentitions

Presenter(s): Uzma Hajiyani, DS2

Advisor(s): Fräns Currier, Onur Kadioglu

Abstract:

Orthodontic study models from 40 patients of Caucasian descent were previously scanned into an electronic database. Arch width on each model was measured. Inter-arch measurements for primary and permanent were measured on each age data point collected for the sample set starting from the age of 2. The models were then evaluated based on six age ranges. T0 was defined as 3-5 years, T1 as 6-8 years, T2 as 9-11 years, T3 as 12-15 years, T4 as 15-18 years and T5 as 19-22 years. Statistical trends in arch width were recorded and evaluated.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Bioactivity of dental adhesives containing metal oxide nanoparticles

Presenter(s): Eman Khan, DS2

Advisor(s): Fernando Luis Esteban Florez

Abstract:

Polymerization shrinkage, poor adhesive infiltration and incomplete enveloping of dentin matrix are critical limitations of current dental adhesive resins. One approach to solve these problems is the development of a bioactive and bond-promoting adhesive resin containing nitrogen-doped titanium dioxide nanoparticles (N-TiO₂). The objective of this study was to investigate the spontaneous and light-stimulated deposition of hydroxyapatite on the surfaces of N-TiO₂-containing and unaltered dental adhesive resins. Experimental adhesive resins were synthesized by adding 20% (v/v) N-TiO₂ (Oak Ridge National Laboratory) to OptiBond Solo Plus (Kerr Corp.). Thin-films (n=12/group; d=12 mm, t=15 mm) were fabricated and light-cured (40sec, 457±15nm) on acid-etched glass cover slips in preparation for bioactivity testing. Thin-films were then light-irradiated (405 ± 15 nm) for 1, 3 and 8 hours either in air or submerged in water (2.5 mL). Specimens were then UV-sterilized and immersed in sterile Dulbecco's Phosphate-Buffered Saline with Calcium and Magnesium aqueous solution (DPBS, 40mL/specimen, 60°C) and were stored at 37°C in dark conditions for 7 days. Solutions of DPBS were subsequently replenished at 72 and 120 hours. Specimens were air dried in dark conditions (minimum of 24 hours) and were sputter-coated with either iridium or gold in preparation for SEM and EDS analyses. Mean deposition values for calcium and phosphorous ranged from 0.60 and 1.13wt% (Control, irradiated 1 hour in water) to 6.73 and 6.13wt% [20% (v/v) N-TiO₂, irradiated 8 hours in air], respectively. Experimental adhesive resins containing 20% (v/v) N-TiO₂ that were subjected to light-irradiation in air for 8 hours demonstrated to have the highest light-stimulated bioactivity among the materials and irradiation durations tested. As hypothesized, light-irradiation in air increased the bioactivity of adhesives containing metaloxide nanoparticles.

This study was supported by a grant from the J. Dean Robertson Society and partially supported by the Oklahoma Center for Advancement of Science and Technology grant #HR16-131. A portion of this research was conducted at the Center for Nanophase Materials Sciences, which is a DOE Office of Science User Facility. This study was presented at the 2017 IADR/AADR General Session and Exhibition.

Title: Longitudinal Arch Perimeter Change From Primary to Permanent Dentition

Presenter(s): Kaitlin Polk, DS4

Advisor(s): Onur Kadioglu, Fräns Currier

Abstract:

Orthodontic study models from 50 patients were previously scanned into an electronic database. Arch perimeter on each model was measured using the OrthoAnalyzer software. Tooth sizes were measured for primary and permanent dentition on separate models corresponding to the stage of development. The models were then evaluated based on six age ranges. T0 was defined as 3-5 years, T1 as 6-8 years, T2 as 9-11 years, T3 as 12-15 years, T4 as 15-18 years and T5 as 19-22 years. Trends in arch perimeter were recorded and evaluated during growth and development.

This study was supported by a grant from the Delta Dental of Oklahoma Oral Health Foundation.

Title: Longitudinal Assessment of Arch Lengths and Palatal Height

Presenter(s): Byron Schroeder, DS3

Advisor(s): Fräns Currier

Abstract:

The purpose of this study was to longitudinally evaluate changes in maxillary and mandibular arch lengths and palatal height/depths over a 20-year period. A total of 25 male and 23 female subjects were selected from the Denver Growth Study based upon strict criteria. Subjects were individuals who did not receive orthodontic treatment and were analyzed from three to 22 years of age. Arch measurements from stereolithographic study casts were obtained using software from ESM Digital Solutions. One researcher obtained the measurements, with 10 subjects (5 males and 5 females) re-measured at a later time in order to establish the accuracy of the measurement ($\pm 0.2\text{mm}$). Arch lengths showed an initial increase from 2 years of age through 11 years of age followed by a consistent and significant decrease in length within both arches. Palatal height was shown to increase substantially and consistently over time. Differences between males and females were in magnitude only, with males having larger average values for arch lengths and palatal heights than females. These longitudinal trends represent arch length and palatal height changes for a population of untreated subjects, which provides a controlled sample from which future research and clinical outcomes can be measured.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Longitudinal overbite/overjet changes in primary/permanent dentition

Presenter(s): Shelby Steffenhagen, DS2

Advisor(s): Fräns Currier, Onur Kadioglu

Abstract:

Longitudinal studies of human growth and development are a valuable tool used in orthodontic care, providing normative data used to better predict growth patterns, improving the orthodontist's ability to make proper diagnoses and formulate effective treatment plans. The Denver Growth Study spans from 1927-1967 and includes subjects of Northern European ancestry born in Denver, CO. From this sample, 1,871 orthodontic study model sets were created and later converted into a digital format in 2011. Of this study population, 48 sample subjects were chosen (25 males and 23 females) to be included in our analysis of overbite/overjet changes in the primary to permanent dentition. Each subject was required to have at least 2 model sets from specific time points (3 to 5, 6 to 8, 9 to 11, 12 to 15, and 16 to 18). Overbite and overjet measurements were then taken on the digital casts at each time point. LOESS plots were generated to identify any overall trends in the data collected. Primary overbite was found to continually decrease with time by 0.5mm, while permanent overbite increased by 1mm until 11-12 years of age and then decreased from then until 18 years of age by 0.5mm. This increase and subsequent decrease in permanent overbite can be attributed to the eruption of the permanent incisors and permanent second molars, respectively. Primary and permanent overjet decreased by <1mm from 3 to 18 years of age. Mean overbite was 1.5mm for primary and 3mm for permanent teeth. Mean overjet was 2mm for primary and 2.8mm for permanent teeth. These trends were compared to those found by the Michigan Growth Study (1976). Notable differences were that their data found primary overbite to remain constant and saw smaller mean changes for primary overbite and primary/permanent overjet, while the other trends were consistent with our study.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Variables influencing tensile strength in orthodontic elastomerics**Presenter(s):** Lynna Van, DS2**Advisor(s):** Sharukh Khajotia, Fräns Currier, Onur Kadioglu

Abstract:

Objectives: A significant reduction in mean tensile strength of orthodontic elastomeric chains within 24 hours after first use is widely documented. Polyurethanes degrade differently depending on the presence of poly(ester) versus poly(ether) urethane bonds. The objective of this study was to determine the tensile force characteristics of orthodontic chains containing poly(ester) bonds after 24-hour exposures to potentially degradative environments. **Methods:** Four grey, closed-loop elastomeric products were tested: 3M Unitek Continuous C Module Chain (3MU), Dentsply GAC Super Chain (GAC), Ormco Generation II Power Chain (ORM), and RMO Energy Chain (RMO). Specimens of each product were divided into five environment groups (n=10/group): air, H₂O, artificial saliva (AS), 0.1U/mL cholesterol esterase (CE), or 20% H₂O₂ + 0.1M CoCl₂ (HC). Each specimen was extended in a Universal testing system to 4x original length (OL) [Fmax tensile strength], then to 3x OL (F0 tensile strength), as per ANSI/ADA Specification No.105 (2010). Tensile force was measured again (F1) after immersion in the groups for 24h (37±1°C, 3x OL). Data were analyzed using two-factor ANOVA and *post hoc* Tukey tests ($\alpha=0.05$). **Results:** Change in force from Fmax to F1 differed significantly among environments and products ($p<0.05$). Difference in mean values (F1-F0; MPa) were:

Environment	3MU		GAC		ORM		RMO	
	F1-F0	Tukey	F1-F0	Tukey	F1-F0	Tukey	F1-F0	Tukey
H ₂ O	-0.5211	A	-0.5347	A	-0.7584	B	0.0065	A
AIR	-0.6297	A	-0.9807	B, C	-0.4222	A	-0.2986	A, B
HC	-0.6960	A, B	-0.7439	A, B	-0.2321	A	-0.1886	A, B
CE	-0.8999	B	-1.1419	C	-0.4029	A	-0.3170	A, B
AS	-1.1584	C	-0.5567	A	-0.3339	A	-0.5376	B

Capital letters denote mean values within each product that were statistically different, based on Tukey rankings ($p<0.05$).

Conclusions: Decreasing the extension from 4x to 3x original length produced differing mean tensile strength reductions among the elastomeric products. All products showed statistically significant decreases in mean strength after 24-hr exposures to the various environments, except RMO after exposure to H₂O.

This study was supported by a grant from the J. Dean Robertson Society. Statistical analysis was supported via funding provided by National Institutes of Health / National Institute of General Medical Sciences grant 1U54GM104938. Materials for this study were graciously provided by the respective manufacturers. This study was presented at the 2017 IADR/AADR General Session and Exhibition.

Title: Enhancing quality of care for patients with dementia in dentistry

Presenter(s): Catherine Lee, DS2

Advisor(s): Kay Beavers

Abstract:

Extended life expectancy, combined with the inevitable aging of the Baby Boomer generation, leads to an unprecedented flux of elderly individuals in the United States within the coming decades. According to the U.S. Bureau of the Census, by 2030 as many as 1 in 5 Americans will be elderly. Not only are more people transitioning into the elderly cohort, but also the rate of age-related health impairments such as Alzheimer's Disease are climbing. According to the Alzheimer's Association, someone in the United States develops Alzheimer's Disease every sixty-six seconds. Alzheimer's Disease, the sixth overall leading cause of death in the United States, represents a cognitive impairment that manifests as severe emotional and behavioral disturbances, and although doctors are trained to treat a patient's physical pain, they are often ill equipped to handle the patient's emotional outbursts and communicative impairments. This paper is meant to educate dental professionals about the disease progression of dementia, and to provide suggestions about how to overcome some of the obstacles pertaining to patents with dementia. For example, the design and layout of a dental office can be thoughtfully prepared to minimize distractions for patients with dementia who struggle with overstimulation; photographs can even be presented during an appointment to stimulate memories, helping to induce familiarity and ease a patient's discomfort. To address a patient with dementia's communication limitations, the provider may alter speech patterns and phrasing, leading to more accurate information gathering from the patient. Even behavioral problems may be managed if the provider takes time to consider the patient's abilities and limitations with empathy instead of viewing these patients as an inconvenience. All of these listed strategies aim to set the patient at ease throughout the entire dental experience, enhancing quality of care and, ultimately, improving outcome success.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Treatment of a mandibular molar with cast dowel core and a FCG crown

Presenter(s): Nishita Philip, DS3

Advisor(s): Eswar Damodara

Abstract:

A 63-year-old male patient reported with extensive coronal destruction of his mandibular molar #19, due to secondary decay under an existing amalgam restoration. The tooth was asymptomatic with no mobility, no tenderness to percussion or palpation. The tooth was treatment planned for a cast post and core and FCG restoration following elective endodontics. After removal of the amalgam restoration and excavation of decay, access cavity was prepped and working lengths were established. Chemo-mechanical preparation was done using sodium hypochlorite and NiTi rotary instruments, followed by apical preparation using stainless steel hand instruments. Obturation was completed using warm vertical condensation using System B and calamus. Post space was prepared in the DL canal until 7.6 mm of post space achieved. The other 3 canals were countersunk for additional retention of the post. Modification of the post space with post drills and of the core space was done to remove any undercuts, and to achieve a straight line path of insertion. Visibility of gutta percha on all prepped canals from the occlusal aspect was required to be achieved. Once the path of insertion was achieved, the canal was cleaned and dried with paper points. A final impression of the post and core preparation was made using polyvinylsiloxane impression materials. Type V stone (Jade stone) was used to fabricate a mastercast, using which a post & core pattern was waxed. The wax pattern was verified for accuracy intraorally. Argebond 42 was used to cast the wax pattern. The casting fit was excellent without any adjustments needed. Cast post & core was cemented using zinc phosphate cement. Tooth preparation was completed for a full cast gold crown design.

A final impression of the crown preparation was done using custom tray, & PVS light and heavy impression materials. The prepped tooth was temporized with acrylic. Full cast gold crown was fabricated and final cementation done with Zinc Phosphate luting cement.

Title: To Determine the Reproducibility of Three Centric Relation Records

Presenter(s): Kelley Carlson, Postgraduate

Advisor(s): Phoebe Vaughan

Abstract:

Purpose: To determine the reproducibility of three different centric relation record techniques by comparing first points of contact.

Method: Five patients were selected randomly to record centric relation using the techniques of bimanual manipulation (BMM), leaf gauge, and an anterior deprogrammer (AD). Casts were then mounted using the records and the first points of contact from each record were compared to determine if the same position was reproduced.

Results: The first points of contact for Patient One were the cusp tips of #27 and #28 using BMM, with the leaf gauge it was the DB line angle of #21. Utilizing the AD it was the cusp tip of #27, however, the casts were mounted end on end with this method. Patient Two's first point of contact with BMM and the leaf gauge was tooth #24. The AD showed the first point of contact being tooth #24 but the casts had a large posterior open bite. Patient Three's initial points of contact with BMM and the leaf gauge were the MF line angle of #22 and the MF line angle of #28. With the AD, the first points of contact were the MI edge of #23, 25-26. Patient Four's first points of contact with BMM were the incisal edge of #26 and on the MI of #24. For the leaf gauge and AD, the first points of contact were the incisal edge of #26 and DL cusp tip of #3. Patient Five's first point of contact with BM was the incisal of #24. For the leaf gauge, it was the incisal edges of #24, 26-27 and with use of the AD, it was the incisal edge of #24 with a posterior open bite.

Conclusion: Centric relation is a difficult position to reproduce. Many factors can contribute to inaccurate records including operator error, patient compliance, and mounting discrepancy. This provisional study is inconclusive in determining whether CR is reproducible with the techniques used and was underpowered to show significance. A larger study would be needed in the future to prove statistical significance.

Title: CR/CO Discrepancy Impact on Orthognathic Surgery Treatment Planning

Presenter(s): Whitney Rochelle, Postgraduate

Advisor(s): Steven Sullivan

Abstract:

Bimaxillary surgery requires meticulous pre-surgical planning. This includes clinical measurements, photographs, radiographs, and accurately mounted and articulated dental models. An accurate interocclusal bite registration is an integral component to properly relate the mandible to the maxilla. Posturing of the mandible in patients with dentofacial deformities is compensatory and often results in a significant CR/CO discrepancy and further complicates the interocclusal bite relationship.

In this prospective study, we evaluated 100 consecutive bite registrations taken preoperatively for bimaxillary surgeries performed from March 2016 to December 2016 at Mercy Hospital. Each clinician obtained the records in a standardized fashion. Patients were placed in a supine position and mandibles were manipulated with the chin-point guidance technique until a stable and reproducible position. Interocclusal recorded was obtained with Blu-Mousse® PVS.

Bite registrations were used to reevaluate interocclusal relationships intraoperatively just following induction of general anesthesia. Any discrepancy was recorded in our database.

We found an average preoperative/intraoperative discrepancy of 2mm with a standard deviation of 1.8mm, range of 0mm-9mm. Patients were also evaluated based on malocclusions. The highest discrepancy was found in Class II malocclusions, 2.13mm and lowest in Class 1, 0mm.

Despite meticulous patient evaluation and methods of obtaining diagnostic records, our results display a consistent difficulty in reproducing centric relation and obtaining an accurate bite registration. With this in mind, the surgeon must mitigate the dilemma of an unstable interocclusal record during pre-surgical planning.

Title: Inadequate Mandibular Incisor Decompensation in Orthognathic Surgery

Presenter(s): Daniel Szalay, Postgraduate

Advisor(s): Steven Sullivan

Abstract:

Patients requiring combined surgical and orthodontic treatment for skeletal-dental deformities initially present with a variable amount of dentoalveolar compensations. The goals of pre-surgical orthodontics revolve around arch alignment, arch coordination and arch decompensation, all of which have a direct effect on surgical movements. Notably, decompensation of the mandibular incisors is a significant factor in achieving optimal outcomes due to the possible limitation of anterior-posterior surgical movements, altering the final post-surgical mandibular skeletal position. Ultimately, the mandible's post-surgical skeletal position has a direct effect on functional and esthetic outcomes, long-term stability, and duration of post-surgical orthodontics.

In our retrospective study, we look at 100 consecutive 2-jaw orthognathic cases performed from 3/10/16-1/3/2017 involving both Class II and Class III patients to evaluate pre-surgical mandibular incisor position and orthodontic decompensation. Pre-surgical lateral cephalometric radiographs and corresponding surgical treatment objective (STO) tracings will be evaluated and mandibular incisor angulation to mandibular plane angle recorded, to derive the prevalence of inadequate mandibular incisor decompensation (normal range $90^{\circ} \pm 6^{\circ}$). Additionally, 25 cases with inadequate decompensation will be selected and cephalometric analysis conducted to quantify the difference in pogonion position that could have been achieved with adequate incisor decompensation.

The clinical implications for such a study are significant and impact the ability to maximize patient esthetic outcomes, promote early diagnosis of possibly detrimental mandibular incisor positions, and to ensure appropriate post-surgical incisor overlap promoting long-term stability.

Title: A Clinical Technique of Functional Impressions and Denture Fabrication

Presenter(s): Clay Algeo, Postgraduate; Bryan Blankenship, Postgraduate

Advisor(s): Phoebe Vaughan

Abstract:

The purpose of this case report was intended to describe a detailed process of creating a retentive, functional, and esthetic denture in a minimal number of appointments. Denture fabrication frequently consumes multiple patient visits and requires adequate time and finances to achieve a desirable result. The dental literature describes several techniques for edentulous impressions and design to achieve a functional, esthetic denture. However, a technique has not yet been presented that achieves this high-end result with relative ease, in a shorter time frame. With these goals in mind, this case report combined techniques of multiple practitioners to see if this type of denture could be achieved. Described in this clinical approach is one technique for impression taking and denture design. The method outlined in this case report is intended to serve as a guide for practitioners in the fabrication of a denture with a high esthetic outcome and function in a lesser amount of time.

Title: Treatment of multiple recession with tunneling technique

Presenter(s): Abdulwahab Alkandari, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

Periodontal plastic therapeutic surgical techniques are used to treat gingival recession within the esthetic zone, surgical protocols have been described to achieve root coverage successfully. This clinical case outlines and describes the tunnel technique with subepithelial connective tissue grafts (allograft) for the coverage of multiple adjacent gingival recessions.

A 23-year-old female was referred for implant placement #11. The patient was concerned about the esthetics of her smile and the health of her gum, she was presented with multiple Miller class I & II recession on esthetic zone of maxillary and mandibular dentition. The surgical technique is based on the construction of a tunnel under the gingival tissue by means of a sulcular incision beyond the mucogingival line without raising the papillae. MTF (Musculoskeletal Transplant Foundation) allograft was introduced through this tunnel, covering the adjacent gingival recessions. A suturing technique to allow this graft to slip through the tunnel under the gingival tissues and to secure and stabilize the graft, and move the entire gingivopapillary complex coronally, covering the recessions is described.

The use of this surgical procedure allows the treatment of multiple adjacent recessions in a single procedure with adequate early healing and highly predictable root coverage results.

Title: Esthetic Transitional Fixed Partial Denture Following Extraction

Presenter(s): Mohammed Felemban, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

Extracting a maxillary anterior tooth may lead to unsatisfied patient due to the esthetic demand. Immediate implant placement with immediate provisionalization is one the treatment options to replace the missing teeth immediately after the extraction. In some cases, Placing the implant immediately after extraction can not be achieved, due to the inability to get primary stability. Mini dental implant has been introduced in the 90s as temporary abutments in implant overdenture cases.

A 70 years old female lawyer presented with fractured abutments for FPD. Her chief complains "I want to extract my teeth and to have a non-removable replacement". The fracture lines were at gingival level. The teeth deemed to be non-restorable. A cone beam computed tomography (CBCT) scan was taken to shows the available alveolar bone volume for implant placement. Delayed implant placement is recommended due to the large incisive foramen detected on the CBCT. On the day of treatment, occlusal index was made. Full thickness mucoperiosteal flap was reflected. FPD was removed and the retained roots of #7 and 9 were extracted. Mini-implant was placed in the edentulous ridge. The existence FPD was prepared and adjusted to be cemented to the mini-implant. The sockets were grafted using demineralized freeze-dried bone allograft (DFDBA) and covered with double layers of collagen tape (CollaTape). FPD was cemented and the site was inspected for excess cement before suturing. Occlusal adjustment was done to ensure that the prosthesis is out of occlusion during functions.

This case report is to present the use of Mini-Implant for esthetic immediate fixed partial denture (FPD) following extraction and ridge preservation.

Title: A Clinical Approach to Full Mouth Rehabilitation

Presenter(s): Taylor Field, Postgraduate

Advisor(s): Michael Fling, Phoebe Vaughan

Abstract:

This case report details a full mouth rehabilitation to restore the dentition for optimal function and high esthetic outcome. The patient in this case report presented to clinic with multiple fractured or missing teeth, severe wear, and a slightly collapsed vertical dimension of occlusion (VDO). His chief complaint was, “My teeth are busted up and I am finally ready to do something about it.” The previous resident placed dental implants in edentulous areas and provided caries control. The clinical method of determining need and designing the case included a “global diagnosis” of the dentition, a full mouth series of radiographs, study models with a Panodent Dentofacial Analyzer mounting, and sets of intra/extra oral photographs. The collection of data and reviewing the patient’s wants and needs led to the completion of a diagnostic wax-up, which demonstrated the potential outcome to the patient. The diagnostic wax-up revealed the need for increasing the VDO, a leveling of the lower occlusal plane, and an arrangement of the teeth into proper Class I occlusion and contacts. The wax-up was completed on articulated models mounted according to centric relation position. The diagnostic wax-up and treatment plan was presented to the patient and was accepted. Over a two-and-a-half-day span in clinic, the teeth were prepared for crowns and temporized with six temporary bridges, which were prepared according to the new VDO. The patient remained in this opened position with temporary bridges for a trial period of two months. The iTero, a digital impression system, was used in the fabrication of the final restorations. These permanent crowns were made in stages, with the anterior crowns being scanned and seated first, followed by the posterior teeth being scanned and placed in the mouth. The final restorations were made of e.Max (lithium disilicate) crowns, full gold crowns, and screw-retained porcelain-fused-to-metal implant crowns.

Title: Juvenile Mandibular Chronic Osteomyelitis: A Case Report

Presenter(s): Joshua Gresehover, Postgraduate

Advisor(s): Erik Nuveen

Abstract:

Juvenile mandibular chronic osteomyelitis (JMCO) has been described in the literature as an inflammatory bone disease of unknown etiology. Patients have a female predilection and present with swelling, pain, and possible trismus of the mandible. Symptoms may be recurrent, with episodes of resolution. Radiographic findings of these patients are consistent with osteomyelitis including swelling of soft tissues and areas of bone with mixed radiolucent and radiodense appearance. Differential diagnosis includes ewings sarcoma, chondrosarcoma, and osteosarcoma. In this case report, a young female was evaluated in a hospital setting for facial swelling of unknown etiology following extraction of a primary tooth by a dentist. Patient was diagnosed with JMCO following biopsy and evaluation, and was treated with NSAID's and steroids. While somewhat rare, clinical and radiographic appearance of JMCO can often be misinterpreted as an odontogenic infection. A proper index of suspicion is necessary to prevent iatrogenic treatment by dental professionals.

Title: An Innovative Technique to Maximize Esthetic Outcomes in Implants

Presenter(s): Lauren Klaus, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

The level of the interproximal papilla is determined by the bone and soft tissue attachment of the adjacent teeth. Once a tooth is extracted, proximal bone loss is anticipated, followed by subsequent loss of papilla height. Advanced hard and soft tissue grafting procedures have been developed to recreate the loss of tissue, however, these procedures and their esthetic outcomes are often not predictable. Therefore, new techniques are continuously being developed in efforts to preserve both hard and soft tissue to maximize esthetic outcomes.

A 57-year-old female was referred for an implant at site #10. The patient presented clinically with a non-carious root tip and adequate papilla form, however, a relatively thin soft tissue biotype. Radiographs revealed thin interproximal bone, a relatively straight root tip, and no peri-apical pathology. The CBCT analysis revealed adequate bone apical and palatal to the root to engage for an immediate implant.

Together with the radiographic and clinical findings, we chose to perform a modified version of Kan's 'Proximal Socket Shield Technique' (PSST). In the PSST technique, a proximal root fragment is left to preserve interproximal bone and soft tissue after an extraction. This technique is indicated in anterior implant cases where loss of crestal bone after an extraction would compromise the esthetic outcome.

During the procedure, the root was sectioned buccolingually until one to two mm of tooth structure was left on both interproximal socket walls. The osteotomy was prepped in accordance with the Straumann bone level tapered 3.3x10 mm protocol, achieving primary stability at 35 Ncm. The implant was grafted with bovine bone, a connective tissue graft, and finished with an immediate temporary. The patient was followed for four months before the final restoration was fabricated and will be recalled every three months for maintenance and evaluation of the implant stability.

This study was presented at the 2017 Southwest Society of Periodontists Meeting.

Title: Comparing the Value and Diversity of CEREC to Conventional Methods

Presenter(s): Scott Thayer, Postgraduate; Behnam Minavi, Postgraduate

Advisor(s): Phoebe Vaughan

Abstract:

CEREC, a CAD-CAM digital system, allows the practitioner to complete a variety of restorative treatments from the chair-side. As the millennial generation becomes a strong presence in the dentistry field, so does the need to incorporate digital dentistry and twenty-first century techniques. The rise of digital dentistry has brought many changes to today's dental profession. Constantly evolving dental technology presents application to a myriad of clinical treatments, and allows for an efficient workflow that fulfills patients' expectations in a more cost effective means. The competition created by the increasing influx of dental professionals into the field has made these requirements increasingly important. Digital systems, such as CEREC, have gained popularity by ease of the application, reduction of lab fees, decreased chair time, and meeting the expectations of today's population. This comparison focuses on the future of dentistry via clinical applications, and addresses the concerns regarding accuracy, financial benefits, and long-term success of CEREC CAD-CAM utilization versus conventional methods of restorative dentistry.

Title: Reconstruction of the Posterior Mandible with Autogenous Block Graft

Presenter(s): Tracey Whitley, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

For implants to be placed in a prosthetically driven position, advanced bone grafting is often necessary. Several techniques can be utilized including block grafting, guided bone regeneration or distraction osteogenesis. When working in the posterior mandible, the ramus enables harvesting of autogenous bone from the same surgical site, offering the advantage of osteogenic, osteoinductive and osteoconductive properties.

A 73-year-old female presents with an atrophic mandibular left posterior ridge. Clinical exam revealed a very prominent external oblique ridge, and autogenous ramus block graft was planned. On the day of treatment, a full thickness mucoperiosteal flap was reflected. An autogenous block graft was harvested lateral to tooth #17, measuring 18 x 7 x 4mm. Cortical perforations were made at the edentulous area of #18-20 to ensure adequate blood supply before grafting the site. Two access holes were prepared on either end of the block and it was fixed to the ridge at sites #19 & 20. The periphery of the block was grafted with FDBA particles and the site was covered with a resorbable collagen membrane. A periosteal releasing incision was made to ensure tension free primary closure. A CBCT scan taken with a radiographic guide 4 months after block grafting showed adequate horizontal alveolar bone volume for implant placement. However, there was limited height to inferior alveolar nerve as well as proximity to the mental foramen, so short implants (6mm) were selected for sites #18 and 19. Astra Osseotite EV 4.2 x 6mm implants were placed at 45Ncm. Three months following implant placement soft tissue augmentation was performed to prepare the site for restorations. The site was augmented using a combination of a strip free gingival graft and xenogenic collagen matrix, as proposed by Urban et al. 2015.

This case report outlines the use of autogenous onlay block grafting with soft tissue augmentation to develop the posterior mandibular ridge.

This study was presented at the 2017 Southwest Society of Periodontists Meeting.

Title: The effects of plasma-deposited thin films on restorative materials

Presenter(s): Mariana Reis, Postgraduate

Advisor(s): Elidiane Rangel, Sharukh Khajotia, Igor Medeiros

Abstract:

Objectives: To evaluate different plasma-deposited hexamethyl-disiloxane (HMDSO) thin films on morphological and optical properties of indirect restorative materials. **Methods:** Disk-shaped specimens (12.0x1.1mm) of a porcelain (VM9, VITA) and two composites (Enamic, VITA; Lava Ultimate, 3M ESPE) were prepared. Different strategies of film deposition were used (n=10): 1) plasma-enhanced chemical vapor deposition (PECVD) of HMDSO using argon (P-Ar); 2) PECVD of HMDSO using oxygen (P-O₂); 3) plasma immersion ion implantation and deposition (P-IIID). Surface roughness (Ra) and film thickness were determined by stylus profilometry. Morphological analysis was assessed using scanning electron microscopy. Water wettability was measured by contact angle goniometry, and optical properties were studied by contrast ratio and color difference measurements. Data were analyzed using one-way ANOVA with repeated measures and Tukey's HSD test (p<0.05). **Results:** Morphological analysis demonstrated that the films coated the substrates uniformly without evidence of discontinuities. For all materials coated with P-O₂, granular structures covered the entire surface. The presence of these structures decreased in P-Ar and P-IIID groups. Mean film thicknesses differed significantly (p<0.001): 0.50μm (P-Ar), 0.60μm (P-O₂) and 0.07μm (P-IIID). Surface roughness was similar in all coatings on composites compared to their controls. For porcelain, P-Ar group showed significant decrease in Ra compared to its control (p<0.001). There was an increase in contact angle for all film groups, except for P-IIID on Lava Ultimate (p<0.001). No statistical differences were found among the contrast ratios. All groups demonstrated a ΔE below 3.0. **Conclusions:** Within the thin film groups, there were variations in morphology, mean film thickness and color difference. Most coated groups showed a decrease in wettability and uniform roughness values when compared to their control. No changes were found in contrast ratio.

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