Capstone Paper

By: Julia Birkeland

Lake Washington Institute of Technology

DHYG 438: Senior Capstone

Spring Quarter - Second Year

May 20th, 2018
Assessments

Health History

A new patient, Jamy P., arrives in our clinic and would like to receive dental hygiene treatment. She is a 32 year old female who presents with the Human Papillomavirus (HPV) and a history of fever blisters. She was diagnosed with HPV vaginally at the age of 18 and it is currently in a dormant state. She is currently under the care of a physician for her overall health and is taking no medications.

Jamy has not seen her dental hygienist in ten years due to her busy schedule and not having dental insurance. The patient joined DSHS insurance and went to a dentist in March of 2016. She received new patient assessments, but decided she did not like the office and did not return for treatment. Now the patient wants to take control of her oral health and try put our clinic for her treatment.

Extaoral Exam

Visual inspection shows the patient has a scar 16 mm long in between her eyebrows. Upon further questioning, we learned that the patient had a fall when she was eight years old resulting in the scar. Palpation and further visual inspection of the patient’s head and neck resulted in no significant findings.

Intraoral Exam

Upon the patient’s initial visit, she presents with a 2x2 mm fever blister on the right side of her upper lip along the vermillion border. The patient reports getting cold sores sometimes and
this one appeared this morning. We explained to the patient about how the herpes simplex 1 virus is transferable and we would be unable to treat her today for risk of the virus spreading. We rescheduled the patient out one week and told her once the blister has ruptured and starts to scab, then we can treat her. The patient returned one week later and the fever blister had healed. The patient’s palate is rounded. Her palatal tonsils are present and within normal limits. The patient has partially erupted mandibular third molars covered by an inflamed operculum. The tongue is slightly coated.

**Gingival Description**

The color of the gingival margins are generally moderately erythematous. There is localized severe erythematous coloring along the facial and lingual of #24 and #25. The marginal contours are generally slightly rolled. The patient’s papillae are generally slightly edematous with localized moderate edema between #24 and 25. The consistency of the tissue is generally slightly edematous and stippled.

**Tooth Chart**

Radiographs in conjunction with an intraoral exam show the patient has had restorative work done. All molar teeth have had restorations. The patient has two composite restorations as well as nine amalgam restorations in her posterior teeth. Aside from restorative work, the patient has several other findings contributing the overall oral status. Teeth #6-11 and #22-27 present with incisal attrition from bruxing and grinding. There is a marginal ridge discrepancy between #4 and #5 because #5 is distally rotated. Tooth #8 is linguoverted and #9 is buccoverted. Tooth #11 is mesially rotated. Tooth #12 is completely distally rotated causing a marginal ridge
discrepancy between #11 and #12, and #12 and #13. There is also a marginal ridge discrepancy between #13 and #14. On the mandible, tooth #19 has an amalgam overhang on the mesial causing irritation to the gingiva. In the anterior, tooth #22 is mesially rotated. Tooth #25 is also mesially rotated and #26 is buccoverted causing for an area that is difficult for the patient to keep clean and a location where biofilm can easily accumulate. The patient also presents with decay on teeth #2, #3, #18, and #21.
Occlusion

The patient presents with a Class I malocclusion due to slight crowding and rotations. The mesiobuccal cusp of the upper first molar occludes with the buccal groove of the lower first molar. The maxillary canine occludes with the distal half of the mandibular canine and the mesial half of the mandibular first premolar. The patient has a slight overbite and a 4 mm overjet with no crossbite or open bite.

Periodontal Chart

The patient has generalized 2-3 mm pockets. There are localized 4 mm pockets in the posterior teeth and on the facial of #25. On the distal of #31, the patient has 6 mm pockets due to #32 being partially erupted. There is localized slight recession between 1-2 mm and a class I furcation on the buccal of #30. Generalized slight bleeding upon probing presents in the posterior teeth and around #24 and #25 where we noted the tissue earlier being severely erythematosus. Radiographs show generalized slight bone loss. After exploring for calculus and with examination of the periochart and radiographs, the patient is classified as a III/2/D2.
Risk Assessment and Plaque Index

The completed risk assessment outlined the patient’s health history, prevention survey, evaluation of hard and soft tissues, clinical and radiographic findings, oral hygiene habits, and a plaque index. Significant factors found in the risk assessment include the patient having evidence of and being at risk for bone loss, attrition, caries, calculus, plaque, gingival recession, gingivitis, and periodontal disease. These factors show the patient is at risk for her periodontal disease.
progressing and susceptibility to decay within the oral cavity. The plaque index added up to 86%, revealing moderate to severe plaque accumulation cervically along the gingival margin.

**Radiographs**

When the patient visited another dental office the year prior, they took a full mouth series of radiographs. Since the radiographs were only a year and a half old, the patient transferred those radiographs to our clinic. We were then able to prescribe four bitewings to update the radiographs. The series of radiographs transferred to us included 14 periapical films and four horizontal bitewings. We then took four new horizontal bitewings to make the radiographs current.
Oral Hygiene and Patient’s Chief Concern

After completing all of the assessments and conducting an interview, the patient reports brushing one time daily at night, switching between a battery powered electric toothbrush and a manual toothbrush. The patient reports trying to floss 3-4 times a week. The patient frequently goes on multiple day hikes where her and her husband camp outside and she reports usually not brushing her teeth while she is away. If she does brush her teeth while camping, she uses a powder dentifrice because it is easier to pack than a tube of toothpaste. Her chief concerns include receiving periodontal scaling and root planing, restoring carious lesions, and improving her overall oral health. The assessments in their entirety provide the findings needed to aid the clinician in creating a dental hygiene diagnosis specific to this patient to address her concerns and create a plan to improve her overall oral and systemic health.

Dental Exam

During the comprehensive exam, new decay was present on four teeth. Teeth #2 and #3 were treatment planned for class II restorations and #19 and #21 for class V restorations. An amalgam overhang removal was planned for the mesial of #19. Teeth #17 and #32 were also recommended for extractions, but the patient was uninterested in having the extractions done at this time because the wisdom teeth are not bothersome to her.

Dental Hygiene Diagnosis

Methods Used

After all new patient assessments were completed, the dental hygiene diagnosis was filled out accordingly. Each row discusses the significant findings addressed in each portion of the new
patient assessments. After stating significant findings, reasonings, and facts about causes and etiologies, a plan for treatment was formed to fit the specific needs of the patient. In order for the patient to achieve her goals of oral and systemic health, we created a plan using possible interventions, treatment adaptations, and behavioral change suggestions.

Studies show the presence of HPV causes an increased risk for the patient to develop oropharyngeal cancer. Part of our treatment modifications for this patient is to be aware of this and monitor her for changes in oral tissues or lymph nodes. Regarding the patient’s hard tissues, we want to restore carious lesions and maintain the integrity of existing restorations as well as remove the amalgam overhang on #19 mesial. A possible intervention to prevent future caries for this patient is the recommendation of at home fluoride by using Clinpro 5000 toothpaste, as well as improving homecare by demonstrating C-shaped flossing.

When creating a plan for the patient’s periodontal status, we want to reduce inflammation of the tissue and shrink the periodontal pockets. We also want to prevent any further destruction and stop the progression of disease. We can do this through demonstrating the bass brushing method and encouraging the patient to increase her brushing to two minutes, two times a day. Attached to the end of this paper is the original dental hygiene diagnosis for this patient.

**Patient Compliance and Motivation**

The patient appears to be dedicated and is taking the appropriate steps to improve her oral health. The patient expresses excitement on getting started improving her oral health status and asks how she can begin to start the process. She immediately schedules her appointments for her restorative treatment as well as her appointments to start her initial periodontal therapy. A new
oral hygiene technique was demonstrated at each hygiene visit and the patient seemed to be compliant with replicating these techniques at home. She returned for her initial therapy with less plaque accumulation and reports to have increased her brushing to two times a day and is trying to floss more frequently.

**Caries – Current and History**

As diagnosed in the comprehensive exam, the patient had active carious lesions and a history of tooth decay. The patient has a number of existing restorations. She presents as a moderate risk for future decay because of her poor oral hygiene habits, existing restorations, and the presence of Streptococcus mutans in the oral cavity.

**Fluoride Sources**

The patient reports drinking mostly tap water at home and she lives in a community with fluoridated water. She was recommended Clinpro 5000, but did not purchase at this time because of her finances. The patient agreed to have topical fluoride varnish applied at the end of her dental hygiene treatment.

**Methods of Evaluation**

To determine if the treatment and interventions have been effective, we will perform assessments a second time following initial therapy. These assessments will be done four to six weeks following the patient’s initial therapy so the tissue has a chance to heal post treatment. A new plaque index will be completed, as well as probing depths and an updated gingival description to evaluate any changes. If the treatment has been successful and the patient has been compliant with her new home care routine, we should see a reduction in pocket depths and
inflammation. The primary means of evaluation will be through interviewing the patient regarding her daily homecare and the accumulation of oral assessments.

**Planning**

*Treatment Plan and Phases*

After assessing the patient’s periodontal chart and her level of calculus, four quadrants of code 4342 scaling and root planing were prescribed followed by a six week tissue re-evaluation and the topical application of fluoride. The patient’s calculus level is moderate interproximally in the posterior teeth and a ring of calculus is present supragingivally around #25. The initial therapy is scheduled and planned to be completed in two appointments with local anesthesia because of the inflammation of the tissue. At the first appointment, quadrant one and quadrant four will be completed. Quadrant two and quadrant three will be completed at the following appointment. The patient is scheduled to return for a tissue re-evaluation four weeks after completing the final quadrant. At the tissue re-evaluation, a new periochart will be completed with a new gingival description. Coronal polishing for stain removal and topical fluoride application will be completed. The amalgam overhang on #19 mesial will also be removed at this time.

*Therapeutic Interventions*

After the completion of each quadrant, a subgingival irrigation with chlorhexidine will be performed to improve healing by providing anti-microbial benefits. The patient will be encouraged to continue using her new oral hygiene techniques at home and maintain a low plaque accumulation.
Implementation

Treatment

After following assessments, the patient returned to start her code 4342 scaling and root planing therapy. We planned to complete two quads in each appointment, but we were only able to complete the lower left quadrant in the patient’s first visit. We anesthetized the lower left quadrant with an inferior alveolar block using one carpule of 2% Lidocaine with 1:100,000 epinephrine. Following scaling and root planing the lower left quadrant, we subgingivally irrigated using chlorhexidine.

At the patient’s second visit, we started by scaling the upper right quadrant. We were able to complete the quadrant quickly with time available to scale and complete the upper left quadrant. We anesthetized the maxilla with an NP and right and left PSA and IO blocks. A boost was given on the left side with an MSA. We gave a GP on the right side, but decided to not give one on the left because we felt like the calculus on the lingual was light enough to scale without it. We used 4.5 carpules of 2% Lidocaine with 1:100,000 epinephrine.

At the patient’s third visit, we scaled the lower right quadrant completed her initial therapy treatment. We anesthetized the lower right quadrant with an inferior alveolar block using one carpule of 2% Lidocaine with 1:100,000 epinephrine.

After the patient’s periodontal therapy, she returned to the clinic to complete her restorative treatment needs. She completed all restorative treatment in a timely matter and no longer has active carious lesions. Her mandibular third molars are still present.
Evaluation

At the patient’s six week tissue re-evaluation, the coloring of her tissue had improved. Her gingival margins were generalized medium pink, but still with areas of slight erythematous on the buccal of #15, the linguals of sextants 1 and 3, and along the linguals of the mandible. Her papillae were generalized pointed with localized areas of edema between teeth #22-26. The tissue at this visit is generalized glossy and slightly edematous. The supragingival ring of calculus has returned on the lingual of tooth #25.

When comparing the periochart before and after initial therapy, the new chart reveals generalized 2-3 mm pockets with localized 4-5 mm pockets. The distal of #31 was still at 6 mm, but that is due to partially erupted #32. There are fewer 4 mm pockets overall and a reduction of bleeding upon probing. The new plaque index score was a 44%, a reduction of 42% since her initial assessments. The plaque accumulation was generally cervically on the linguals of the mandible and along #2 and #15 buccal.

Due to the return of supragingival calculus on the linguals of the mandibular anteriors, we reviewed the oral hygiene techniques again. We discussed how to angle the toothbrush vertically to reach the linguals of the mandibular anteriors. The patient expressed disappointment in the return of her calculus so quickly and wants to continue to improve her oral hygiene at home.

To complete the tissue re-evaluation, we performed an amalgam overhang removal on the mesial of #19, full mouth cavitroned and handscaled any bleeding points, coronal polished,
flossed, and applied topical sodium fluoride varnish. We recommended the patient return for a	hree month recall due to the rapid build-up of calculus and her AAP classification.
3 Month Periodontal Maintenance

When the patient returned for her three month periodontal maintenance visit, there were no changes in her extraoral or intraoral examinations. Her gingival description revealed generalized flat margins with localized slight rolling on the mandibular posterior linguals. Her tissue coloring was generalized light pink with localized slight erythematous on the mandibular linguals. Papillae were generalized pointed with localized blunting between #25 and #26. Tissue is generalized firm and stippled. The patient’s tissue health had improved since her last tissue re-evaluation appointment.

The patient reports putting in a large effort since her last appointment by implementing the bass brushing technique 2 times a day and flossing almost every day. Treatment was completed at this visit by full mouth cavitroning and hand scaling, coronal polishing, and applying topical fluoride varnish. The patient was sent home with a 7-day nutritional analysis. She was asked to fill out the analysis every day for the next seven days and we would call her in a week to discuss the findings.

Nutritional Analysis

After sending the patient home with a 7-day nutritional analysis, we called one week later to follow up. The patient was compliant with the request and stated that it was easy to fill out because she eats almost the same thing every day.

Every morning the patient skips breakfast and instead drinks a brewed coffee with about two tablespoons of vanilla coffee creamer. Upon further questioning, the patient states she usually sips on the coffee for an hour before it is finished. The patient works for a house cleaning
company during the week and she usually eats lunch in the car between houses. The patient reports eating a quarter cup of trail mix with nuts, raisins, and chocolate chips for lunch. She also has a ham and cheddar cheese bagel sandwich with cream cheese spread on the bagel. The patient usually drinks bottled water during the day and at lunch.

The patient’s dinner varied over the course of the week. One night, her and her husband ordered a cheese pizza and she had two slices. One night the patient had spaghetti and marinara meat sauce for dinner. Another night she went out for dinner and ordered an arugula salad with grilled chicken breast and a vinaigrette dressing. She had two glasses of red wine during this dinner. The next night, the patient had leftover spaghetti and marinara meat sauce from two nights prior.

Typically, the patient has some sort of carbohydrate for dinner with a meat. She usually drinks tap water with dinner besides the occasional night where she will have a glass of wine. The patient states that following dinner, her and her husband will usually wind down on the couch for an hour and watch television before they get ready for bed.

**Caries Risk Assessment**

When analyzing the patient’s dietary analysis and her cariogenic risk, the patient is at a moderate to high cariogenic risk. The patient is at a high cariogenic risk because her diet is high in carbohydrates. When carbohydrates sit on the teeth, they transform into a sugar, the perfect home for bacteria. The bacteria then produce an acid on the teeth causing an acid attack and weakening the enamel. The same process happens when the patient sips on her coffee and
creamer for an hour in the morning. This process was explained to the patient and we came up with a way she can reduce the number of acid attacks on her teeth.

After the patient’s high cariogenic risk was explained to her, one of the ways we decided to reduce the number of acid attacks on the teeth is to drink her morning cup of coffee faster. When the patient spends less time sipping on her coffee, she is preventing as many acid attacks on her teeth. We also decided that if she cannot finish her coffee faster, then she agreed to sip on water after drinking the coffee to neutralize the pH levels in her mouth.

**Conclusion**

After completing all of Jamy P.’s new patient assessments, her initial therapy, tissue re-evaluation, and three month periodontal maintenance, I was excited to see the whole picture of her treatment come together. When seeing Jamy at her tissue re-evaluation, it was disappointing to see the ring of calculus return on her mandibular linguals. It felt like I had put in all this time and effort into her treatment, for it to just return to the way that it was before her initial therapy. I realize now, it is something I will have to get used to because not all of our patients are compliant with what we recommend. But at her three month periodontal maintenance visit, it brought me joy because she said she was excited to see me to show me she had been working really hard on her homecare. That was an exciting feeling to know the effort I had put into teaching her how to improve her homecare was put to use and made a difference.

Seeing her tissue improve from start to finish was an important thing for me to be able to see. It shows us the work we are doing is actually making a visible difference and our profession as prevention experts can really make a difference in someone’s life.