PREFERENCE OF ABSORBENT GEL VS PRF IN SOCKET PRESERVATION AFTER SURGICAL EXTRACTION OF IMPACTED MANDIBULAR THIRD MOLARS

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ABSTRACT:
Introduction: Surgical extraction of impacted mandibular third molars, one of the most commonly performed procedures includes a lot of post operative complications.

Aim: This study was conducted to compare the preference of students among two different materials I.e., Absorbent gel and PRF for preservation of extracted socket of impacted mandibular third molar teeth.

Materials and methods: A cross sectional study was conducted among the post graduate students of oral and maxillofacial surgery department in saveetha dental college, Chennai with a questionnaire based online survey. The data collection was done through google forms. Data was analysed using SPSS software. A correlation test and chi square analysis was done. On chi square test analysis, the p value is more than 0.05, is statistically insignificant.

Results: 62.50% of the students prefer Absorbent gel for socket preservation. 37.50% of the students prefer PRF for socket preservation. Also the students were aware of the indications, contraindications, uses and associated syndromes of the material they use.

Conclusion: It was concluded that Absorbent gel is the most preferred material for socket preservation post surgical extraction of impacted mandibular third molars.

KEYWORDS: Absorbent gel; extracted socket; PRF; socket preservation.

I. INTRODUCTION

In dentistry, various treatment procedures are done to treat dental problems (Patturaja and Pradeep, 2016). Maxillofacial trauma, one of physical trauma to the facial region, commonly encountered by maxillofacial surgeons is the most common reason for visiting dental clinics (Abhinav et al., 2019). Fear and anxiety during a dental procedure can also complicate a treatment. Pre-operative dental anxiety is a major predictor of pain experienced by patients during dental extractions. Dental anxiety and anxiety-related avoidance of dental care creates significant problems for the patients and dental practitioners (Sweta, Abhinav and Ramesh, 2019). Hence, it is important to reduce anxiety before treatment to reduce pain during the treatment (Santhosh Kumar Mp, 2017). Various studies suggest use of different materials for prevention and management of various dental problems (Dodson, 2004), (Sammartino, Tia and Bucci, 2009), (Coceancig, 2009). A study was designed to compare the effect of application of 0.2% chlorhexidine chlorhexidine gel, a eugenol-based paste, together with a control group on the postoperative incidence of alveolar osteitis in patients having third molars extracted (Jesudasan, Wahab and Sekhar, 2015). There are also recent advances in dentistry like use of carbon dioxide laser for management of paediatric oral ranula (Packiri, Gurunathan and Selvarasu, 2017). Dental professionals are at a greater risk for acquiring cross-infection while treating patients (Mp and Rahman, ...
During most dental therapeutic procedures, blood and saliva are often involved, which may contain infectious pathogens and microorganisms which carries a small chance of HIV transmission during dental procedures. Many dentists are reluctant to treat HIV patient(Rahman and Mp, 2017).Dental manipulation such as extraction of teeth or scaling and root planning has been considered as a source of transient bacteremia(Kumar and Snena, 2016).

Surgical extraction of impacted third molars, the most commonly performed procedure in the oral and maxillofacial surgical practice, results in intra bony defects distal to the mandibular second molar(Ahmed, Mohamed and Hattab, 2009),(Richardson and Dodson, 2005),(Kanet al., 2002),(Peng et al., 2001). A sufficient amount of functional and healthy bone is a very important factor in getting and maintaining osseointegration.Comparison of Extended Nasalabial Flap Versus Buccal Fat Pad Graft in the Surgical Management of Oral Submucous Fibrosis was also done to accommodate the lost tissue(Patilet et al., 2017).Crest height is reduced for up to 60% of their original height following the extraction of a teeth, following which certain soft tissue complications can be expected(Schropp et al., 2003; Buser, Martin and Belser, 2004; Araújo et al., 2005; Araújo and Lindhe, 2009).Therefore filling the socket, at the time of extraction is recommended to prevent such type of complications (Avila-Ortiz et al., 2014; Flügge et al., 2015).Bone grafting done immediately after surgical removal also helps in maintaining the alveolar ridge height(Eppley, 2012). A Clinical trial was to compare two techniques of maxillary disjunction, with 10mg/kg tranexamic acid as an adjuvant, in isolated non-segmented Le Fort I procedures(Christabel et al., 2016).Since bone grafts are highly expensive, studies have suggested the use of various alternatives. The use of numerous hemostatics and allowing bone regeneration (Finn, Schow and Schneiderman, 1992).Previously our team has a rich experience in working on various research projects across multiple disciplines(Neelakantanet al., 2015; Ramamoorthi, Nivedhitha and Divyanand, 2015; Abdul Wahabet et al., 2017; Eappen, Baig and Avinash, 2017; Manivannanet al., 2017; Patilet et al., 2017; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; Ravindiran and Praveenkumar, 2018; Wahabet et al., 2018; MalliSureshbabuet al., 2019; Mehta et al., 2019; Rajeshkumaret al., 2019; Samuel, Acharya and Rao, 2020; Satish and Karthick, 2020).

Absorbent Gel:
It is a white insoluble, off white, non elastic, porous, pliable product prepared from purified pork skin, gelatine granules. It has haemostatic properties, with their effect more physical than altering the blood clotting mechanisms. It is absorbed within 4-6 weeks. In addition to its use in oral and maxillofacial surgical procedures, it can be used in various other medical fields like abdominal, anorectal, orthopaedic, genital, urinary, gynaecology and neurosurgery to control bleeding(Singh et al., 2015).

Platelet Rich Fibrin:
It is an inexpensive, low morbidity autograft prepared by centrifugation of whole blood, drawn into a tube without anticoagulant. It is considered as a rich source of cytokines and growth factors. Hence it is considered as a good healing inductor biomaterial(Dohan Ehrenfest, de Peppo and Doglioli, 2009). It insist of fibrin matrix that incorporates leukocyte and platelets, in which platelets, in which the blood concentrates leads to more efficient cell migration, proliferation and angiogenesis(Zhao, Tsai and Chang, 2011; Suttapreyasri and Leepong, 2013); improves immune control and recruitment of circulation cells and promotes wound protection throughout the promotion of an epithelial cover(Miron and Choukroun, 2017).

The aim of this study is to compare the efficiency of absorbent gel vs platelet rich fibrin in socket preservation after surgical extraction of impacted mandibular third molars.

II. MATERIALS AND METHODS:
A cross sectional study was conducted among the post graduate students of oral and maxillofacial surgery department in saveetha dental college, Chennai. It is a questionnaire based online survey conducted to assess the knowledge and practice of post graduate students in socket preservation after surgical extraction of impacted mandibular third molars. Ethical board clearance of saveetha dental college was obtained.

The data collection was done through google forms. The questionnaire contained 20 questions about their knowledge, attitude and practise of students in socket preservation after surgical extraction. The data collected was tabulated in excel sheet.
The collected data was entered in excel sheet and output variable was defined in SPSS software. The dependent variables were knowledge, attitude, and practice of dentists in socket preservation after surgical extraction. A correlation test and chi square analysis was done. The results were recorded. The results were considered statistically significant.

**RESULTS AND DISCUSSION:**

![Graph showing the results](image)

Figure 1: This graph represents the importance of socket preservation after surgical extraction. X axis represents the students' opinion on whether socket preservation is important for surgical extraction. Y axis denotes the number of respondents. Orange colour denotes the number of students who accept socket preservation is important post surgical extraction. Green colour denotes the number of people who think socket preservation is not important for surgical extraction. 68.75% of the population accept socket preservation is important after surgical extraction. 31.25% of the population do not accept this fact. Majority of dentists accept socket preservation is important post extraction.
Figure 2: This graph represents the most Preferred Material For Socket Preservation After Surgical Extraction. X axis represents the materials for socket preservation. Y axis denotes the number of respondents. Orange colour denotes the number of people who prefer Ab gel for socket preservation. Green colour denotes the people who prefer PRF as socket preservation material. 62.5% of the practitioners prefer Ab gel as socket preservation material, whereas 37.5% of the population prefer platelet rich fibrin as socket preservation materials. Ab gel is most preferred for socket preservation post extraction when compared to PRF.

Figure 3: This graph represents the syndrome associated with the use of Ab gel. X axis denotes the syndromes and Y axis the number of respondents. Orange colour denotes the number of people who chose Toxic shock syndrome. Green colour denotes the people who chose Ellis van creveld. Purple denotes the people choosing Riegers syndrome. 50% of the population are aware Toxic shock syndrome is associated with it. While the rest of the participants who are not aware of it chose Ellis - van creveld syndrome (31.25%) and Riegers syndrome (18.75%). Majority of the students are aware Toxic shock syndrome is associated with the use of Ab gel.
Figure 4 – This graph represents opinion of practitioners who use alloplastic material is harmful for open socket. X axis represents the students opinion on harmless of alloplastic material and Y axis represents the number of individuals. Pink colour represents the number of students who accept alloplastic material is harmful for open socket. Green colour represents the students who do not accept it. 31.25% of the participants feel use of an alloplastic material can harm an open surgical socket. 68.75% of the population do not agree with it. Most of the participants do not accept use of alloplastic materials can harm open surgical socket.

Figure 5 – This graph depicts the awareness on recent articles that support PRF and AB gel in socket preservation. X axis represents the students awareness on recent articles supporting the use of socket preservation materials and Y axis represents the number of respondents. Orange colour represents the number of students that are aware of recent articles that support use of socket preservation materials. Green colour denotes the students who are not aware of the associated articles. 81.25% of the students are aware of recent articles that support use of socket preservation material. 18.75% of the population are not aware of it. Majority of the dentists are aware of it yet there is a lack of awareness among few dentists.
Figure 6 – This graph represents the Practitioners Encountered Side Effects Due To Use Of Ab Gel/Prf. X axis represents whether the respondents have encountered side effects due to use of preservation materials and Y axis the number of respondents. Orange colour denotes the number of students who have encountered any side effects. Green colour represents the number of students who have not encountered any side effects. Half of the participants (50%) have encountered some side effects with the use of socket preservation materials whereas the rest half (50%) of the participants did not encounter any side effects.

Figure 7 This graph represents the Speed And Time For Blood Centrifugation. X axis represents the speed and time for blood centrifugation and Y axis denotes the number of respondents. Orange colour denotes the students chose 5000 RPM for 10 mins. Green colour represents the students who chose 5000 RPM for 12 mins. 81.25% of the population chose 5000 rpm for 10 mins. 18.75% of the population chose
5000 rpm for 12 mins. Majority of dentists are aware of the centrifugal time and speed for separation of particles for preparation of PRF.

Figure 8: This graph represents the association between the importance of socket preservation and most preferred material for socket preservation after surgical extraction of impacted mandibular third molars. X-axis represents the importance of socket preservation post surgical extraction and y-axis represents the number of respondents in which Orange colour denotes the Ab gel. Green colour represents PRF. Out of 11 students who accept socket preservation is important post surgical extraction, 56.25% of the post graduate students chose Absorbent gel for socket preservation and 12.50% of the post graduates chose PRF for socket preservation. 5 students who did not accept socket preservation as an important factor, out of which 6.25% of the students opt Ab gel and 25% of them chose PRF. Majority of the students who accept socket preservation is important also chose Ab gel as choice of material. On chi-squared test analysis, results explains the p value is more than 0.05, has not significant association between the importance of socket preservation and material.

The questionnaire was sent to 28 post graduate students, out of which 16 people responded completely which accounts for only 57.1%. The present study was to compare the efficiency of Ab gel and PRF in socket preservation after surgical extraction of impacted mandibular third molars. In a fellow study, 4 years after third molar extraction, Kugelberg (Baslarli et al., 2015), showed that 44.4% of the subjects aged 26 years (or) older had intra bony defects exceeding 4mm. Risk factors associated with bone loss after lower third molar extraction included age, direction of eruption, pre operative bony defects and resorption of second molar (Baslarli et al., 2015). The packing of gel foam alone would neither promote fibroblast growth and mitosis nor provide a support for epithelial outgrowth. Graph 2 shows, Ab gel is more preferred when compared to PRF. This is in contrary with the studies that PRF has an reported advantage of promoting soft tissue healing. (Srinivas et al., 2018) A question was raised about the reason for their preference of those materials, various reasons such as PRF contains concentrated growth factors, Ab gel is easily placed, PRF is easily available, use of PRF is a easier technique, Ab gel is a easy preservative, Ab gel helps in blood clotting. Also alternatives for socket preservation materials like concentrated growth factors, bone grafts, platelet rich plasma, hemocoagulase and some enzymes were suggested. Also almost everyone of them were aware of the indications and contraindications of the materials they use for socket preservation. A study was conducted on the emerging role of botulinum for the treatment of orofacial disorders can also be used as a modality for the indirect treatment of post operative pain (S. K. Mp, 2017).
Previously we have worked on studies like the analgesic effect of paracetamol vs ketorolac post dental extraction which also formed a basis of the current study(Rao and Kumar, 2018). Knowledge of dental students about the newest guidelines for antibiotic prophylaxis for high-risk patients in dentistry and the correct application of these guidelines in different aspects are very important for a safe dental practice(Kumar and Snena, 2016), evaluations of three-dimensional volumetric changes in airway after lefort one impaction surgery using three-dimensional cone beam computed tomography (3D-CBCT) in patients with vertical maxillary excess (VME) which inspires for the idea of including 3D views as a prophylactic method of preventing complication(Vijayakumar Jain et al., 2019), exploration of the prognostic significance and clinico-pathological correlations of the Wnt pathway genes in a cohort of surgically treated patients with oral squamous cell carcinoma (OSCC) patients.(Marimuthuet al., 2018) using digital software.

Our institution is passionate about high quality evidence based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018; Ramesh et al., 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; Vijayashree Priyadarsini, 2019; Mathew et al., 2020). We hope this study adds to this rich legacy.

III. CONCLUSION:
Within the limitations of the study, it can be concluded that Ab gel is the most preferred material for socket preservation, also the practitioners are aware of the uses, indications and contraindications of the materials used by them for socket preservation.

REFERENCES:


