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Does Diabetes Mellitus Compromise the Wound Healing of the Mandibular Fracture- Retrospective Study.

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KEYWORDS

Diabetes mellitus, mandibular fracture, wound healing, post operative complications,

ABSTRACT:

Introduction:

Wound healing in fractures is highly compromised in T2DM due to various factors. The regenerative capacity of the bone tissues is impaired at cellular, molecular and biomechanical levels.

Aim:

To examine the management and outcomes of mandibular fractures in patients with diabetes mellitus by examining the injury, treatment methods and complications.

Materials and methods:

A database of OPD patients were analyzed for this study. Around 579 patients with mandibular fracture were retrospectively retrieved. Information on age, gender, etiology, pattern of fracture and treatment done, complications was obtained, tabulated and analyzed statistically.

Result:

Among the patients with mandibular fractures associated with diabetes mellitus, the majority did not develop complications. A total of 14 patients were observed without complications, while 3 patients experienced postoperative complications. This indicates that most diabetic patients in the study showed satisfactory healing without significant complications.

Conclusion:

Within the limits of the present study it can be concluded that mandibular fracture patients who suffer from diabetes mellitus have no relevance with postoperative complications.

1. Introduction:

Fracture of facial bones is quite a common issue faced by many people around the world. Among them mandibular and nasal fractures are the commonest fractures. Mandibular fractures occur usually by trauma due to fall, road traffic accidents, physical assaults, sports injuries and industrial accidents. The mandible usually fractures in more than one site. The common sites are coronoid process, foramen, alveolar process, base and

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angle of mandible, ramus of mandible, mandibular notch and condylar process. The ring-like anatomy of the mandible contributes to about 50% of traumatic fracture cases. Patients may experience varied problems such as trismus, malocclusion, pain, tenderness and swelling intraorally and extraorally. Injury to the inferior alveolar nerve causes paralysis in the lower lip and chin, chance of losing teeth and lacerations in the lip [1]. Mandibular fracture reconstruction is usually done by internal fixation, screws and mini plates placement and flap reconstruction techniques.

Diabetes mellitus is a metabolic disease which causes abnormally elevated blood sugar levels. It is of many types namely: type 1 DM, type 2 DM, gestational diabetes, neonatal diabetes, caused secondary to endocrinopathies etc [2] [3]. Pathophysiology of diabetes include: 1. Improper insulin secretion by beta cells of pancreas and 2. Insulin sensitive tissue reacts to insulin secretion. In addition diabetes mellitus can lead to cardiovascular diseases [4].

In general wound healing is compromised in Diabetes mellitus patients. Some of the other factors responsible for causing delayed wound healing: age, malnutrition, obesity and wound infections. The cause of delayed wound healing is suggestive of studies from immune cells. PMN and fibroblast do not react to injured tissues which causes delayed wound healing in diabetes [5].

Wound healing in fractures is highly compromised in T2DM due to various factors. The regenerative capacity of the bone tissues is impaired at cellular, molecular and biomechanical levels [6]. But wound healing in mandibular fracture is still under review. The aim of the present study is to analyze the wound healing in mandibular fracture of the diabetes mellitus patients. This study is aimed to examine the management and outcomes of mandibular fractures in patients with diabetes mellitus by examining the injury, treatment methods and complications.

2. Materials and methods:

A database of OPD patients were analyzed for this study. Around 579 patients with mandibular fracture were retrospectively retrieved. Information on age, gender, etiology, pattern of fracture and treatment done, complications was obtained, tabulated and analyzed statistically. Entities such as mandibular fracture patients with diabetes mellitus, treatment they underwent and complications post op were correlated.

3. Results:

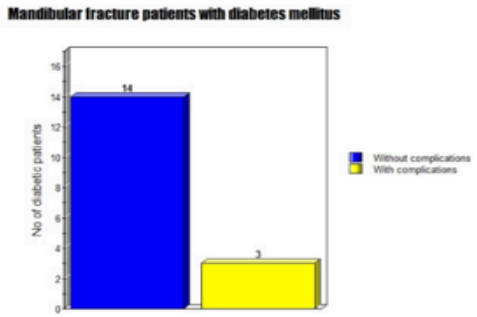

Figure 1: represents the mandibular fracture patients with diabetes mellitus who have and are free from complications.

From figure 1, among the patients with mandibular fractures associated with diabetes mellitus, the majority did not develop complications. A total of 14 patients were observed without complications, while 3 patients experienced postoperative complications. This indicates that most diabetic patients in the study showed satisfactory healing without significant complications.

4. Discussion:

Wound healing in general is compromised in diabetes mellitus irrespective of origin of tissues. Mandibular fractures are not exceptional in this case. Norman et al did a data search on diabetic population with mandibular fracture to know the postoperative complications which is similar to this study. They have concluded that diabetic patients with mandibular fractures proved to have a higher overall rate of complications [7].

Milap et al in their study wanted to know the postoperative complications in facial fracture patients with diabetes mellitus. They conclude that it resulted in postoperative infections and cardiac complications even on controlling the blood sugar levels [8]. Linna et al in their study added that non surgical site related complications in mandibular fracture elderly patients with diabetes were existing [9].

In the article search it can be seen that Post Op complications in diabetes patients were seen mostly in bone fractures other than head and neck region and in mandibular fractures are mostly rare. Jiao et al in their study also conclude that fracture healing was

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compromised due to diabetes and the fracture site is not of head and neck region [10] [11].

Daniel et al concluded that post op complications are mostly due to anatomical, hardware related and host-related complications and not of diabetes mellitus [12]. So, from the literature search it can be seen that the results are of mixed conclusion and some articles support the present study. In the present study, out of 579 patients only 17 patients suffered from diabetes mellitus and out of 17 patients only 3 patients had postoperative complications like surgical site infection (infection due to suture) and it resolved at the earliest.

From the data search it can be concluded that mandibular fracture patients' wound healing and post op complications have no relevance with diabetes mellitus. In future studies randomized control trials can be performed to get even more promising results.

5. Conclusion:

Within the limits of the present study it can be concluded that mandibular fracture patients who suffer from diabetes mellitus have no relevance with postoperative complications.

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CONFLICT OF INTEREST

The author declares that there was no conflict of interest in the present study.

AUTHORS CONTRIBUTION:

PADMALOCHINI S: Literature search, data collection, analysis, manuscript drafting.

Dr. SARAVANAN L: Data verification, manuscript drafting

References:

1. Dhawan A, Shetty J, Sandhu S. MANDIBULAR FRACTURE MANAGEMENT- A NOVEL TECHNIQUE: MANAGEMENT OF MINIMALLY DISPLACED MANDIBULAR FRACTURES USING SELF DRILLING IMF SCREWS- A CLINICAL STUDY. LAP Lambert Academic Publishing; 2011.
2. McFarlane SI, Bakris GL. Diabetes and Hypertension: Evaluation and Management. Springer Science & Business Media; 2012. Available:
3. Daly A, Sapra A, Albers CE, Dufner AM, Bhandari P. Food Insecurity and Diabetes: The Role of Federally Qualified Health Centers as Pillars of Community Health. Cureus. 2021;13: e13841. doi:10.7759/cureus.13841
4. Romero A, Saldarriaga C, Ramos CE, Quesada D, Chazzin G, Fernández FN, et al. Consensus document of the management of type 2 diabetes and heart failure: Consejo Interamericano de Falla Cardíaca e Hipertensión Pulmonar (CIFACAH) and Inter-American Society of Cardiology (IASC). Arch Cardiol Mex. 2023;93: 14–26. doi:10.24875/ACM.23000059
5. Shyng Y-C, University of Manchester. Faculty of Medicine. Wound Healing in Diabetes Mellitus. 1999. Available:
6. Tan MH. Diabetes Mellitus: Impact on Bone, Dental and Musculoskeletal Health. Academic Press; 2020. Available:
7. Ward NH 3rd, Wainwright DJ. Outcomes research: Mandibular fractures in the diabetic population. J Craniomaxillofac Surg. 2016;44: 763–769. doi:10.1016/j.jcms.2015.09.001
8. Raikundalia M, Svider PF, Hanba C, Folbe AJ, Shkoukani MA, Baredes S, et al. Facial fracture repair and diabetes mellitus: An examination of postoperative complications. Laryngoscope. 2017;127: 809–814. doi:10.1002/lary.26270
9. Bonanthaya K, Panneerselvam E, Manuel S, Kumar VV, Rai A. Oral and Maxillofacial Surgery

for the Clinician. Springer Nature; 2021. Available:

10. Ekstrom RA. The Effect of Alloxan Diabetes and Insulin Treatment on Fracture Healing in the Rat: Calcium-45 and Sulfur-35 Uptake by the Healing Bone. 1977. Available:

11. Van Pham P. Bone and Cartilage Regeneration. Springer; 2017. Available:

12. Perez D, Ellis E 3rd. Complications of Mandibular Fracture Repair and Secondary Reconstruction. Semin Plast Surg. 2020;34: 225–231. doi:10.1055/s-0040-1721758