Research Article

Surgical management of atrophic mandibular fractures: A review literature

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ABSTRACT

Background: In current trends, there is a significant raise in the elder population thanks to the improved medical facilities and the advent of innovative drugs. The elder population are more mobile now and are getting engaged in leisure activities nowadays to a larger extent so that the earlier infrequently reported atrophic mandibular fractures are becoming frequent. This article deals with conventional as well as new techniques that are found to manage atrophic mandibular fractures efficiently. **Conclusion:** The surgeons feel that the fracture of atrophic mandible is the most difficult to treat, as the procedures are more technique sensitive. As the population gets old, the surgeons will encounter lot of fractured atrophic mandible cases more often than not. There are a lot of techniques in treatment that are more practical, and surgeons must have a thorough understanding of both advantages and disadvantages of it. It is becoming directly proportional that the treatment of atrophic mandibular fractures improves day by day as the plating systems evolve.

KEY WORDS: Atrophic mandible, Closed reduction, Fracture, Open reduction

INTRODUCTION

The atrophic mandibular fractures are highly challenging ones for the surgeons to intervene. In early days at around 1960s, all the elder ones had encountered atrophic mandibular fractures and the clinician will look to manage it conservatively or he would not treat at all which is decently called "surgical neglect."[1-3]

The closed reduction techniques were more dominant on those days. Previously, they follow a technique called mono mandibular fixation, in which the fractured atrophic mandible is reduced by the lower denture alone surrounded by the circummandibular wiring, and then, the technique was evolved as maxillomandibular fixation which involved both dentures of the jaws fixed by circummandibular wiring.[4] However, this technique had lot of disadvantages like the respiration was compromised, difficulty in maintaining oral hygiene, and patients encountered dietary deficiencies.[5]

The technique called gunning splint overcame this difficulty. A very old ancient technique which involves designing custom-made upper and lower dentures with an opening in the middle for airway as well as for feeding was fixed by circummandibular wiring. This technique was proposed by Thomas Gunning.[6] However, this technique also had its own short comings such as it can be used only in the lesser atrophic mandible and fracture should lie on the denture-bearing area. This technique cannot be used on the comminuted fractures.[7] After the discovery of open reduction techniques, the surgical approaches to atrophic mandibular fractures have improved drastically. The use of gunning splints along with open reduction was discovered, in which gunning splint was placed and the primary stability was achieved; then, peralveolar wiring, circumpalatal wiring, and circummandibular wiring are done with 0.5 stainless steel wires.

In the other technique, the wiring was done directly on the fractured segments without gunning splints. It was preferred for the oblique fractures, but this technique had a lot of disadvantages due to very poor healing. The external bone fixation was discovered in which the external bone pins were placed on the fracture segment; it was very much useful in fixing comminuted fractures as the support taken from the contralateral side. However, this technique also had its disadvantages such as poor esthetics.

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DISCUSSION

Open reduction method involves more technique precision, and the probability for its failure is on higher side. Always, there is a controversy prevailing between the open and closed mouth techniques.[8] As the patient loses his/her teeth, there will be rapid bone resorption leading to decrease in the supply of blood.

Bruce and Ellis reported that as the height of the mandible decreases, the complication for the fracture to heal decreases.[9] If the open technique has to be performed, the patient must be subjected to general anesthesia which is itself has its own risk as the geriatric population mostly have one or the other systemic complications. For open methods, reduction of the fractured fragments is very crucial as it is very difficult to achieve because of its low surface area. Open reduction techniques have higher chances of malunion or nonunion as the bones are knife edged, and there will be diminished blood supply. In open reduction techniques, healing occurs by primary intention. The approaches will be mostly extraoral. Transoral approaches are also used. However, in these approaches, isolating the facial artery and marginal mandibular nerve is very crucial. Plating the fractured atrophic mandible becomes even more difficult as the mandibular canal will be in close proximities due to a diminished height of the mandible.[10]

Evolution of open reduction techniques in the management of atrophic mandibular fractures:

CONCLUSION

The surgeons feel that the fracture of atrophic mandible is the most difficult to treat as the procedures are more technique sensitive. As the population gets old, the surgeons will encounter lot of fractured atrophic mandible cases more often than not. There are a lot of techniques in treatment that are more practical, and surgeons must have a thorough understanding of both advantages and disadvantages of it. It is becoming directly proportional that the treatment of atrophic mandibular fractures improves day by day as the plating systems evolve.

REFERENCES

1. Marciani RD. Critical systemic and psychosocial considerations in management of trauma in the elderly. Oral Surg Med Oral Pathol Oral Radiol Endod 1999;87:272-80.
2. Available from: http://www.census.gov/ipc/www/usinterimproj. [Last accessed on 2008 Jul 11].
3. Perren SM, Allgower M. Manual of Internal Fixation: Techniques Recommended By the Ao-Asif Group. 3rd ed. Germany: Springer, Verlag; 1991. p. 16.
4. Kushner GM, Alpert B. Management of mandibular body fractures. Atlas Oral Maxillofac Surg Clin North Am 1997;5:63-4.
5. Zide MF, Ducic Y. Fibula microvascular free tissue reconstruction of the severely comminuted atrophic mandible fracture case report. J Cranio-Maxillofac Surg 2003;31:296-8.
6. Scott RF. Oral and maxillofacial trauma in the geriatric patient. In: Fonseca RJ, Walker RV, editors. Oral and Maxillofacial Trauma. 2nd ed., Vol. 2. Philadelphia, PA: Saunders; 1997. p. 1045-72.
7. Spina AM, Marciani RD. Mandibular fractures. In: Fonseca RJ, Marciani RD, editors. Oral And Maxillofacial Surgery. Vol. 3. Philadelphia, PA: Saunders; 2000.
8. Ellis E. Treatment methods for fractures of the mandibular angle. J Craniomaxillofac Trauma 1999;28:243-52.
9. McGregor AD, MacDonald DG. Age changes in the human inferior alveolar artery a histological study. Br J Oral Maxillofac Surg 1989;27:371-4.
10. Luhr HG, Reidick T, Merten HA. Results of treatment of fractures of the atrophic edentulous mandible by compression plating: A retrospective evaluation of 84 consecutive cases. J Oral Maxillofac Surg 1996;54:250-5.

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