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Article *in* Quintessence international (Berlin, Germany: 1985) · August 2009

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Unusual complications associated with third molar surgery: A systematic review

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Objective: Third molar removal is a frequent surgical procedure. Common complications associated with third molar surgery are well-recognized and frequently explained to patients during the process of informed consent. The general dental practitioner, as well as the oral and maxillofacial surgeon, must be familiar with all possible complications. This systematic review serves as a reminder of the unusual complications of this routine procedure. **Method and Materials:** Studies were located using systematic searches in Medline and the Cochrane Library electronic databases, as well as hand searching of key texts, references, and reviews relevant to the field. Key words included *third molar*, *wisdom tooth*, *complications*, *unusual*, and *rare*. References from the relevant articles were also double-checked. The review was limited to English- and German-language articles published within the last 18 years. **Results:** Frequently detected, well-known complications are permanent nerve damage and immediate or late mandibular fractures. Twenty-four other complications were identified in 22 articles. Among these complications were inflammatory processes, abscess formation, and displacement of teeth and instruments. Single case reports describe asphyxial death after postextraction hematoma, life-threatening hemorrhage, brain abscess, epidural abscess, benign paroxysmal positional vertigo, subcutaneous and tissue space emphysema, subdural empyema, and herpes zoster syndrome. **Conclusion:** To achieve good patient care, it is necessary to realize the variety of possible complications. Rare complications must be recognized early so that adequate therapy can be immediately ensured. *(Quintessence Int 2009;40:565–572)*

Key words: adverse effects, complications, extraction, rare, removal, third molar, unusual, wisdom tooth

Third molar surgery is one of the most common procedures performed in oral and maxillofacial surgery practices.[1–6] Nevertheless, third molar removal requires accurate planning and surgical skills. As we know from surgical procedures in general, complications can always arise. In the literature, the frequency of complication after third molar removal is between 2.6% and 30.9%.[1] The spectrum of complications ranges from harmless adverse effects (pain and swelling) to nerve damage, mandibular fracture, and life-threatening infections. Minor complications are generally defined as those that can resolve without further treatment. Major complications can be defined as those that need further treatment and may result in irreversible consequences.[5,6]

Although impacted third molars may remain symptom-free indefinitely, it is highly probable that they may be the cause of one or more problems.[7] Preoperative minor complications are pain, pericoronitis, development of periodontal disease on the second molar, crown or root resorption of second molar, caries in third or second molars, symptoms of temporomandibular joint disorder,

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Table 1 Common intra- and postoperative complications and adverse effects associated with third molar removal[3–5,8–13,15]

	Minor complications	Major complications
Intraoperative	• Bleeding • Buccal fat pad herniation • Incomplete root removal • Oroantral communication • Root fracture • Second molar restoration damage	• Alveolar bone fracture • Oroantral communication • Excessive bleeding or hemorrhage • Maxillary tuberosity fracture • Transient inferior alveolar nerve damage
Postoperative	• Alveolar osteitis • Bleeding • Pain • Swelling • Trismus	• Abscess formation/osteomyelitis • Excessive bleeding or hemorrhage • Secondary infection • Chronic fistula associated with oroantral communication

Table 2 Summary of unusual complications associated with third molar surgery

	Complications
Intraoperative	• Displacement of instrument • Displacement of tooth or root fragment • Immediate mandibular fracture
Postoperative	• Abscess of the orbit; subperiosteal abscess of the orbit • Asphyxial death caused by postextraction hematoma • Brain abscess • Epidural abscess • Emphysema • Herpes zoster syndrome • Inflammatory infiltration • Late mandibular fracture • Life-threatening hemorrhage • Lingual nerve damage • Paroxysmal vertigo • Permanent inferior alveolar nerve damage • Pneumothorax • Subdural empyema

and preoperative swelling.[2] Major complications in this case are abscess formation, spontaneous fracture of the mandible, and odontogenic cysts or tumors.[2] The most frequent preoperative problem is pericoronitis. Numerous recent studies have tried to identify risk factors for intra- and/or postoperative complications.[1,5,6,8–15] Common intra- and postoperative complications and adverse effects associated with third molar removal are summarized in Table 1. The general dental practitioner, as well as the oral and maxillofacial surgeon, must be familiar with all possible complications. On the one hand, it is helpful for patient education and information; on the other, unusual complications need to be recognized early to ensure adequate therapy.

In this study, complications are considered rare or unusual if the incidence is commonly quoted less than 1%. The aim of this systematic review is to remind practitioners of the unusual complications associated with third molar surgery.

METHOD AND MATERIALS

Studies were found using systematic searches in Medline and the Cochrane Library electronic databases between 1990 and 2008. Additionally, a hand search of key texts, references, and reviews relevant to the field was performed. Key words included *third molar*, *wisdom tooth*, *complications*, *unusual*, and *rare*.

Data were included if the following criteria were met:

1. The study had to deal with intra- or postoperative complications associated with the removal of third molars.
2. The date of publication had to be between 1990 and 2008.
3. The text had to be published in English or German.

To gather all relevant studies, the references from the found studies were double-checked.

RESULTS

Many studies were found about permanent inferior alveolar and lingual nerve injuries and mandibular fractures during and after mandibular third molar removal. Twenty-three articles described complications different from the above-mentioned rare but well-known events. Among these complications were inflammatory processes, unusual abscess formations, and displacement of teeth. An overview is shown in Table 2. All of these complications are considered major.

Furthermore, single case reports describe extreme events: asphyxial death caused by postextraction hematoma, life-threatening hemorrhage, benign paroxysmal positional vertigo, subcutaneous and tissue space emphysema, subdural empyema, and herpes zoster syndrome. The reviewed case reports are presented in Table 3.

The mean patient age among the 24 cases was 28 (SD 12.8) years. In most cases, the complication occurred after mandibular third molar removal. A second surgical intervention was needed in nearly all cases. To find the cause of the complication, computed tomography (CT) or magnetic resonance imaging (MRI) was needed in all cases. In most cases, the first surgical procedure was described as complicated, and the intervention was reported as extensive or lengthy.

DISCUSSION

Permanent nerve damage

Permanent inferior alveolar or lingual nerve damage is extremely rare but a well-known risk associated with third molar surgery. Injury of the lingual or inferior alveolar nerve during removal of mandibular third molars is among the most common causes of litigation in dentistry.[16] A close anatomic relationship between these nerves and the third molar places them at risk for damage. The incidences of these extremely rare complications vary among the studies and are difficult to determine exactly because of the small study populations. The incidence of permanent inferior alveolar nerve lesions ranges from 0%[17,18] to 0.9%[19]; the usual accepted rate is about 0.3%.[20,21] The complication rate for temporary lingual nerve damage is around 0.4%,[22] and for permanent lingual nerve damage, it is even lower.[2,20]

Mandibular fracture

Immediate or late fracture of the mandible is a rare but major complication.[23] It occurs when the bone is not strong enough to withstand the forces acting on it. The reduction of bone strength may be caused by physiologic atrophy, osteoporosis, or pathologic processes, or it can be secondary to surgical intervention.[24] There is no valid data on the incidence, and the risk factors are not clearly understood.[24] Libersa et al found an incidence of 0.0049%.[25] In a study by Arrigoni and Lambrecht in which 3,980 third molar removals were analyzed,[8] a complication rate of about 0.29% was detected. The peak incidence occurs in patients over 25 years of age, with a mean of 40 years.[24–26] Because of the greater masticatory force, men may

Table 3 Reviewed single-event case reports of unusual third molar complications

Study	Tooth no.*	Complication	Gender/ age	Therapy
Munoz-Guerra et al[27]	28	Subperiosteal abscess of the orbit	M/57	Intravenous treatment with antibiotics, surgical drainage
Ramchandani et al[28]	18, 28, 38, 48	Subdural empyema, herpes zoster syndrome	M/21	Antibiotics, bur-hole craniotomy, subdural drainage
Burgess[29]	NA	Epidural abscess	F/20	Intravenous antibiotics, neurosurgical drainage
Revol et al[30]	48	Brain abscess	M/26	Antibiotics, neurosurgery
De Biase et al[31]	38	Displacement of root in the lingual soft tissue	M/20	Removal
Yalcin et al[33]	48	Displacement of handpiece bur	F/35	Removal, antibiotics
Durmus et al[34]	28	Displacement of tooth in the posterior part of the maxillary sinus	M/17	Removal
Durmus et al[34]	38	Displacement of tooth in the lingual area of the mandible	F/32	Removal
Huang et al[35]	48	Displacement of root fragment in the pterygomandibular space	M/28	Removal
Dimitrakopoulos and Papadaki[36]	28	Displacement of tooth in the infratemporal fossa	F/46	Removal
Ozyuvaci et al[37]	48	Displacement of tooth in the submandibular region	M/29	Removal
Koseglu et al[38]	48	Displacement of tooth in the sublingual space	F/34	Removal
Pippi and Perfetti[39]	38	Displacement in the sublingual space	M/28	Removal
Tumuluri and Punnia-Moorthy[40]	48	Displacement of root fragment in the pterygomandibular space	F/28	Removal
Esen et al[41]	38	Displacement of tooth in the lateral pharyngeal space	F/24	Tonsillectomy, removal, drainage
Ertas et al[42]	38	Displacement of tooth in the lateral pharyngeal space	F/28	Removal
Gay-Escoda et al[43]	48	Displacement of tooth in the lateral cervical position	M/34	Removal
Moghadam and Caminiti[44]	18, 38, 48	Life-threatening hemorrhage	M/32	Intubation, intensive care unit
Funayama et al[45]	48	Asphyxial death caused by postextraction hematoma	M/71	–
Sekine et al[46]	38	Pneumothorax	M/45	Thoracic drainage, antibiotics
Wakoh et al[47]	48	Emphysema	F/24	Antibiotics
Wakoh et al[47]	38	Emphysema	F/26	NA
Capes et al[48]	38, 48	Bilateral cervicofacial, axillary, and anterior mediastinal subcutaneous emphysema	F/14	Analgesics
D'Ascasio et al[49]	18, 28, 38, 48	Benign paroxysmal positional vertigo	F/28	NA

(M) Male; (F) female; (NA) not applicable.
*Universal(FDI): 1(18), 16(28), 17(38), 32(48).

be more likely to have late fractures.[25] Intraoperative fractures may occur with improper instrumentation and excessive force to the bone. Most late fractures occurduring mastication 13 and 21 days after surgery. During this period, granulation tissue is replaced by connective tissue in the alveolar socket.[25]

Unusual inflammatory processes and abscess formation

In the reviewed case reports, extensions of the inflammatory processes to atypical regions of the brain and cervical region are shown. In 1 case, a subperiosteal abscess of the orbit appeared in a 57-year-old man following the uneventful extraction of the maxillary left third molar[27]; it might have been caused by extension of the infection via the pterygopalatine and infratemporal regions to the inferior orbital fissure. Another article presented the case of a subdural empyema and herpes zoster syndrome (Hunt syndrome).[28] In this case, a 21-year-old man had all 4 third molars removed. An abscess involving the right pterygomandibular and submasseteric spaces and extending to the infratemporal fossa was found. Although antibiotic therapy and drainage were initiated, he developed severe frontal headache and vomiting with a Glasgow coma score of 13. MRI showed a subdural collection in the right temporoparietal region. He had emergency craniotomy and subdural drainage.[28]

Burgess reported a case of epidural abscess of a 20-year-old woman after extraction of a third molar.[29] First she was diagnosed with a musculoskeletal neck sprain resulting from posture during the operation. Three days later, the patient presented with increased neck pain on the right side and sensational numbness in the right arm. Nine days after surgery an epidural abscess to the right of C4/C5 vertebrae appeared in the MRI.[29] In another case a brain abscess developed after removal of the mandibular right third molar in a 26-year-old man. He needed emergency neurosurgery and antibiotic treatment for 8 weeks.[30]

Displacement of third molars and instruments

Accidental displacement of impacted third molars, either a root fragment, the crown, or the entire tooth, is not common during extraction, but is nevertheless a well-recognized, frequently mentioned complication.[31–33] Information about its incidence and management is limited. It usually occurs when the tooth is located lingually, the lingual cortical plate is fenestrated, and if surgical technique is inadequate.[32] When a root fragment "disappears" during extraction, its retrieval should not be attempted. Immediate referral to a specialist should be arranged.[34,35]

Another possibility of maxillary third molar displacement is luxation into the infratemporal fossa.[36] Further reports describe third molar displacement into the submandibular space,[33,36] sublingual space,[38,39] pterygomandibular space,[35,40] lateral pharyngeal space,[41,42] or lateral cervical area. In 1 case, the symptoms started after 2 months. The patient experienced recurrent inflammatory swelling in the right submaxillary space. For 14 months, the same clinician supervised treatment with antibiotics. After extensive imaging procedures and surgery, the tooth was found beneath the platysma muscle.[43]

One report was found on foreign bodies. A 35-year-old woman had severe trismus, swelling, and pain 3 weeks after removal of the mandibular right third molar. A 20-mm diamond bur was found in the submandibular space.[33]

Further unusual complications

Airway compromise was described by Moghadam and Caminiti.[44] A 32-year-old man experienced swelling of the soft palate due to postextraction hemorrhage after extraction of the maxillary right and both mandibular third molars at his clinician's office on the same day. CT revealed a hematoma in the submandibular and lateral pharyngeal spaces that resulted in deviation of the oropharynx and constriction of the airway at the level of the oropharynx. The patient was intubated for 2 days and treated with antibiotics and high-dose steroids.[44]

There is 1 report of death resulting from asphyxiation caused by a postextraction hematoma in a 71-year-old man. Respiratory arrest occurred 12 hours after treatment. The hematoma involved the submandibular, lingual, and buccal spaces leading to severe narrowing of the oropharynx.[45]

The algorithm for management of acute intraoral hemorrhage reminds clinicians that severe intraoperative or postoperative hemorrhage is one of the few life-threatening

complications for which a clinician may have to initiate management.[44] The involvement of the airway down to the lung was shown in a few cases, one with a bilateral pneumothorax after removal of the mandibular left third molar in a 45-year-old man. Furthermore, there were 3 cases of emphysema. In 2 of these cases, an air-turbine dental handpiece was used.[46–48] Benign positional paroxysmal vertigo was described in 1 case after the removal of all third molar teeth.[49] Recognition of mediastinal emphysema following surgical extraction is difficult because there are no absolute clinical symptoms and signs.[47,48]

Age

Although third molar surgery is a common procedure, it might not be so straightforward after all. Although third molars are frequently considered for removal in teenagers and young adults, most reported cases with severe complications occur if removal takes place later in life. This age-related trend has often been described as a risk factor for post-extraction complications.[1,3,9,15] Factors that have been suggested to explain this phenomenon are increased bone density, higher surgical difficulty, complete formation of the root, and reduced capacity for subsequent wound healing.[1,9] For this reason, clinicians need to be especially cautious with elderly patients.

CONCLUSION

Removal of mandibular third molars is associated with a higher rate of complication compared to the maxillary jaw. Elderly patients are at an especially high risk. To determine a diagnosis and initiate further treatment, radiologic imaging via CT or MRI is often needed. It is important to realize the variety of possible severe complications and initiate immediate treatment to secure optimal patient care.

ACKNOWLEDGMENT

The author thanks Dr Gwendolin Marie Manegold for critically reviewing the manuscript.

REFERENCES

1. Bui CH, Seldin EB, Dodson TB. Types, frequencies, and risk factors for complications after third molar extraction. J Oral Maxillofac Surg 2003;61:1379–1389.
2. Chiapasco M, De Cicco L, Marrone G. Side effects and complications associated with third molar surgery. Oral Surg Oral Med Oral Pathol 1993;76:412–420.
3. Chuang SK, Perrott DH, Susarla SM, Dodson TB. Age as a risk factor for third molar surgery complications. J Oral Maxillofac Surg 2007;65:1685–1692.
4. Figueiredo R, Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Delayed-onset infections after low third molar extraction: A case control study. J Oral Maxillofac Surg 2007;65:97–102.
5. Jerjes W, El-Maaytah M, Swinson B, et al. Experience versus complication rate in third molar surgery. Head Face Med 2006;2:14.
6. Kim JC, Choi SS, Wang SJ, Kim SG. Minor complications after third molar surgery: Type, incidence, and possible prevention. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2006;102:4–11.
7. Hupp JR, Tucker MR, Ellis E (eds). Contemporary Oral and Maxillofacial Surgery, ed 5. St Louis: Elsevier-Mosby, 2008.
8. Arrigoni J, Lambrecht JT. Komplikationen bei und nach operativer Weisheitszahnentfernung. Schweiz Monatschr Zahnmed 2004;114:1271–1279.
9. Blondeau F, Daniel NG. Extraction of impacted mandibular third molars: Postoperative complications and their risk factors. J Can Dent Assoc 2007;73:325.
10. Chaparro-Avendaño AV, Pérez-Garcia S, Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Morbidity of third molar extraction in patients between 12 and 18 years of age. Med Oral Patol Oral Cir Bucal 2005;10:422–431.
11. Figueiredo R, Valmaseda-Castellón E, Laskin DM, Berini-Aytés L, Gay-Escoda C. Treatment of delayed-onset infections after impacted lower third molar extractions. J Oral Maxillofac Surg 2008;66:943–947.
12. Figueiredo R, Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Incidence and clinical features of delayed-onset infections after extraction of lower third molars. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005;99:265–269.

13. Kunkel M, Morbach T, Kleis W, Wagner W. Third molar complications requiring hospitalization. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2006; 102:300–306.
14. Susarla SM, Dodson TB. Risk factors for third molar extraction difficulty. J Oral Maxillofac Surg 2004;62: 1363–1371.
15. Voegelin TC, Suter VG, Bornstein MM. Komplikationen während und nach chirurgischer Entfernung unterer Weisheitszähne. Schweiz Monatschr Zahnmed 2008;118:192–198.
16. Sandstedt P, Sörensen S. Neurosensory disturbances of the trigeminal nerve: A long-term follow-up of traumatic injuries. J Oral Maxillofac Surg 1995; 53:498–505.
17. Blondeau F. Paresthésie: Résultat suite à l'extraction de 455 3e molaires incluses mandibulaires. J Can Dent Assoc 1994;60:991–994.
18. Schultze-Mosgau S, Reich RH. Assessment of inferior alveolar and lingual nerve disturbances after dentoalveolar surgery, and of recovery of sensitivity. Int J Oral Maxillofac Surg 1993;22:214–217.
19. Carmichael FA, McGowan DA. Incidence of nerve damage following third molar removal: A West of Scotland Oral Surgery Research Group study. Br J Oral Maxillofac Surg 1992;30:78–82.
20. Rood JP. Permanent damage to inferior alveolar and lingual nerves during the removal of impacted mandibular third molars. Comparison of two methods of bone removal. Br Dent J 1992;172:108–110.
21. Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Inferior alveolar nerve damage after lower third molar surgical extraction: A prospective study of 1117 surgical extractions. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001;92:377–383.
22. Malden NJ, Maidment YG. Lingual nerve injury subsequent to wisdom teeth removal—A 5-year retrospective audit from a high street dental practice. Br Dent J 2002;193:203–205.
23. Wagner KW, Schoen R, Wongchuensoontorn C, Schmelzeisen R. Complicated late mandibular fracture following third molar removal. Quintessence Int 2007;38:63–65.
24. Krimmel M, Reinert S. Mandibular fractures after third molar removal. J Oral Maxillofac Surg 2000; 58:1110–1112.
25. Libersa P, Roze D, Cachart T, Libersa JC. Immediate and late fractures after third molar removal. J Oral Maxillofac Surg 2002;60:163–165.
26. Iizuka T, Tanner S, Berthold H. Mandibular fractures following third molar extraction: A retrospective clinical and radiological study. Int J Oral Maxillofac Surg 1997;26:338.
27. Munoz-Guerra MF, González-García R, Capote AL, Escoral V, Gías LN. Subperiosteal abscess of the orbit: An unusual complication of the third molar surgery. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2006;102:9–13.
28. Ramchandani PL, Sabesan T, Peters WJ. Subdural empyema and herpes zoster syndrome (Hunt syndrome) complicating removal of third molars. Br J Oral Maxillofac Surg 2004;42:371.
29. Burgess BJ. Epidural abscess after dental extraction. Emerg Med J 2001;18:231.
30. Revol P, Gleizal A, Kraft T, Breton P, Freidel M, Bouletreau P. Brain abscess and diffuse cervicofacial cellulites: Complication after third molar extraction. Rev Stomatol Chir Maxillofac 2003; 104:285–289.
31. De Biase A, Guerra F, Giordano G, Salucci S, Solidani M. Surgical removal of a left lower third molar root after iatrogenic displacement in soft tissue. Case report. Minerva Stomatol 2005;54:389–393.
32. Huang IY, Wu CW, Worthington P. The displaced lower third molar: A literature review and suggestions for management. J Oral Maxillofac Surg 2007; 65:1186–1190.
33. Yalcin S, Aktas I, Emes Y, Atalay B. Accidental displacement of a high-speed handpiece bur during mandibular third molar surgery: A case report. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2007; 105:29–31.
34. Durmus E, Dolanmaz D, Kucukkolbsi H, Mutlu N. Accidental displacement of impacted maxillary and mandibular third molars. Quintessence Int 2004; 35:375–377.
35. Huang IY, Chen CM, Chang SW, Yang CF, Chen CH, Chen CM. Surgical management of accidentally displaced mandibular third molar into the pterygomandibular space: A case report. Kaohsiung J Med Sci 2007;23:370–374.
36. Dimitrakopoulos I, Papadaki M. Displacement of a maxillary third molar into the infratemporal fossa: Case report. Quintessence Int 2007;38:607–610.
37. Ozyuvaci H, Firat D, Tanyel C. Accidental displacement of a mandibular third molar: A case report. Quintessence Int 2003;34:278–280.
38. Koseglu BG, Gumru O, Kocaelli HA. Lower third molar displaced in the sublingual space. Dentomaxillofac Radiol 2002;31:393.
39. Pippi R, Perfetti G. Lingual displacement of an entire lower third molar. Report of a case with suggestions for prevention and management. Minerva Stomatol 2002;51:263.
40. Tumuluri V, Punnia-Moorthy A. Displacement of a third molar root fragment into the pterygomandibular space. Aust Dent J 2002;47:68–71.
41. Esen E, Aydogan LB, Akcali MC. Accidental displacement of an impacted mandibular third molar into the lateral pharyngeal space. J Oral Maxillofac Surg 2000;58:96.
42. Ertas U, Yaruz MS, Tozoglu S. Accidental third molar displacement into the lateral pharyngeal space. J Oral Maxillofac Surg 2002;60:1217.

43. Gay-Escoda C, Berini-Aytés L, Piñera-Penalva M. Accidental displacement of a lower third molar. Report of a case in the lateral cervical position. Oral Surg Oral Med Oral Pathol 1993;76:159–160.
44. Moghadam HG, Caminiti MF. Life-threatening hemorrhage after extraction of third molars: Case report and management protocol. J Can Dent Assoc 2002; 68:670–674.
45. Funayama M, Kumagai T, Saito K, Watanabe T. Asphyxial death caused by postextraction hematoma. Am J Forensic Med Pathol 1994;15:87–90.
46. Sekine J, Irie A, Dotsu H, Inokuchi T. Bilateral pneumothorax with extensive subcutaneous emphysema manifested during third molar surgery. A case report. Int J Oral Maxillofac Surg 2000;29:355–357.
47. Wakoh M, Saitou C, Kitagawa H, Suga K, Ushioda T, Kuroyanagi K. Computed tomography of emphysema following tooth extraction. Dentomaxillofac Radiol 2002;29:201–208.
48. Capes JO, Salon JM, Wells DL. Bilateral cervicofacial, axillary, and anterior mediastinal emphysema: A rare complication of third molar extraction. J Oral Maxillofac Surg 1999;57:996–999.
49. D'Ascanio L, Salvinelli F, Martinelli M. Benign paroxysmal positional vertigo: An unusual complication of molar teeth extraction. Br J Oral Maxillofac Surg 2007;45:176–177.