STUDII CLINICE

CORONECTOMY OF THE MANDIBULAR THIRD MOLAR: A PROSPECTIVE STUDY OF 20 PROCEDURES

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Summary

Coronectomy is a surgical procedure designed to avoid the risk of iatrogenic neurological injury to the inferior alveolar nerve (IAN).

The aim of this study was to evaluate success rate of coronectomy.

Material and methods: Twenty patients underwent 20 coronectomy procedures of impacted mandibular third molar with close proximity to IAN evaluated on preoperative radiographs. The procedure was performed under mandibular nerve block. Follow-up appointments were perform at 1 week, 1, 6 months.

Results: No patients developed IAN injury and no cases of root exposure were found. Eighteen wounds healed primary. In two cases the socket opened and healed secondary. No one root fragments were removed.

Conclusion: Coronectomy of wisdom teeth is a safe technique - effective alternative to extraction, when the wisdom tooth shows radiographic signs of close proximity of the IAN to the root.

Key words: coronectomy, mandibular third molar, inferior alveolar nerve, injury

The removal of third molars is one of the most common procedures in oral surgery. Third molar impactions are the most commonly impacted teeth (from 35.9% to 58.7%).[1] A rare, but serious complication associated with impacted mandibular third molar extraction is inferior alveolar nerve (IAN) injury. The resulting sensory deficit may or may not be permanent. Coronectomy is a surgical procedure, first proposed in 1984 by Ecuyer and Debien, designed to avoid the risk of iatrogenic neurological injury to the inferior alveolar nerve (IAN) by removal of the anatomical crown only, leaving root fragments.[2]

The aim of this study was to evaluate success rate of coronectomy.

Material and methods: Twenty patients underwent 20 coronectomy procedures of impacted mandibular third molar to prevent IAN injury. The authors used preoperative radiographs to determine that all of the teeth that underwent a coronectomy were in close proximity to the IAN. The coronectomy was performed under mandibular nerve block. No pulp treatment was performed and the roots were left vital. The surgical procedure was performed in 6 steps by Gleeson et al.[3]:

✓ Reflection of a triangular full thickness mucoperiosteal flap

✓ Tooth exposure to the level of the cement-enamel junction (CEJ) by limited bone removal using a fissure bur in a high speed hand piece

✓ Decoronation by sectioning of the tooth in the buccal lingual dimension, 1-2mm below the CEJ to ensure crown removal without mobilizing the roots

✓ Finishing of the root surface with a round bur used to reduce the surface of the root to 2-3mm below the level of the surrounding alveolar bone, and remove any retained enamel

✓ Debridement of the socket

✓ Closure with a flap and interrupted sutures

Postsurgery medication includes antibiotics. Follow-up appointments were performed at 1 week, 1, 6 months. Patients were investigated for IAN injury, wound healing, and root exposure. Radiographs were taken preoperatively, immediately postoperatively, and 6 months postoperatively.

Results: Twenty patients were enrolled in this study, with a total of 20 lower third molars. Patients' structure is shown in table 1.

Table 1

Patients' structure

Number	Age	Sex: **M**(male); **F**(female)	Location of the mandibular molar: **L** (at left side); **R** (at right side)
1	40	F	L
2	25	M	L
3	80	M	R
4	67	F	R
5	24	F	L
6	23	M	R
7	19	M	R
8	35	F	R
9	18	M	R
10	18	M	L
11	33	M	L
12	33	M	L
13	43	M	L
14	64	M	R
15	31	F	R
16	28	M	R
17	22	M	R

18	36	M	R
19	21	F	R
20	35	M	L

The mean patients' age was 34.75±17.19 years (minimum – 18 years, maximum – 80 years). Six patient were female (30%), 14 were male (70%). We didn't observe any signs of IAN injury in all cases of this series. Eighteen wounds healed primary, but in 2 cases the socket opened and healed secondary. In these two cases healing occurs under everyday hygiene procedures with 3% hydrogen peroxide and iodine solution and changes of cotton gauze with antibiotic ointments. During the follow-up period there are no cases of root exposure. No one root fragments were removed. A typical preoperative and post-operative radiograph is shown in Figures 1 and 2. At the 6-month stage, most radiographs do appear to show bone formation having occurred superior to the retained root fragment (figures 3).

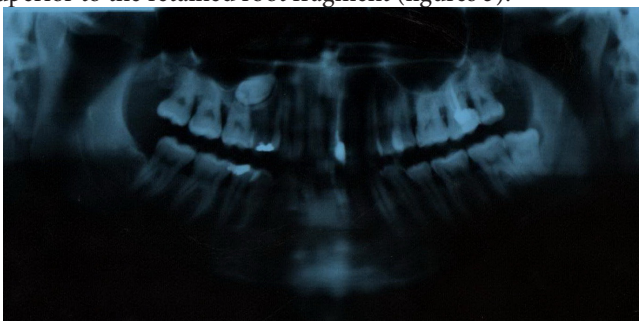

Figure 1. *Preoperative radiograph – left third mandibular molar near to mandibular canal.*

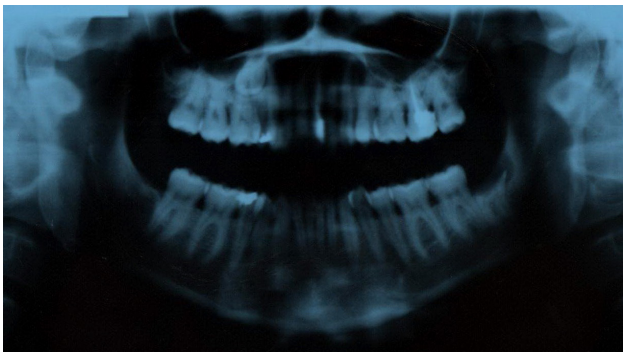

Figure 2. *Postoperative radiograph.*

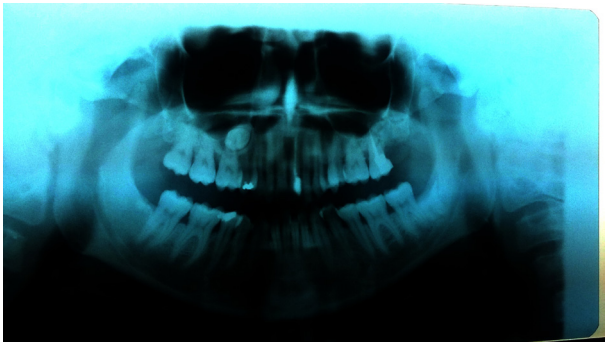

Figure 3. *Six months after coronectomy of left third mandibular molar.*

Discussion: The inferior alveolar nerve involvement during the removal of lower third molars is a clinical problem. The technique of coronectomy is one of the possible alternatives to total removal for a third mandibular molar in cases of proximity to the inferior alveolar nerve. The technique is gaining wider acceptance, although there are differences in the indications and actual technique used within and between countries.[4] In the study by Cilasun et al. no patients of the study group (88 teeth) developed IAN injury[5] according to our case series. Leung and Cheung found postoperative IAN injury for one case after coronectomy (0.6%).[6] In the study of Hatano et al., six patients of the control group (n = 118) showed signs of IAN injury (5%).[7] IAN injury ranged from a minimum of 0% to a maximum of 9.5%.[2,8]

Incidences of postoperative ranged from a minimum of 2% to a maximum of 12%.[7,9] Renton et al. found a similar incidence of dry socket infections in the control group (9.6%), coronectomy group (12%), and failed coronectomy group (11.1%).[9] Hatano et al. observed a higher percentage of dry socket infections in the control group (8.5%) in respect with coronectomy group (2%).[7]

The root exposure and the need for reoperation varied from a minimum of 0.6% to a maximum of 6.9%.[6,10]

An antibiotic therapy was prescribed postoperatively in our case series according to other authors.[2,8,11,12]

Conclusion: Results indicate that coronectomy of wisdom teeth is a safe technique - effective alternative to extraction, when the wisdom tooth shows radiographic signs of close proximity of the IAN to the root. The present results thus warrant further research with larger sample size and longer follow-up to fully describe the long-term outcome of the electively retained root.

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