

Complications in Exodontia - Accidental Dislodgment to Adjacent Anatomical Areas

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The authors report 4 cases of accidental dislodgement of teeth to adjacent anatomical areas during extraction. The causes and their prevention are discussed and solutions for the problem are suggested.

Key Words: exodontia, complications, accidental dislodgment of teeth.

Introduction

The extraction of teeth requires the same degree of basic surgical knowledge on the part of dental surgeons as any other surgical field (Gietz, 1946) and should be based on the principles of surgical technique which govern general surgery. Successful surgical treatment depends on a correct surgical diagnosis, on judicious surgical planning, on the selection and execution of an appropriate surgical technique, and on a well-monitored postoperative period. However, despite these precautions, extraction of teeth is exposed to the accidents and complications common to all buccomaxillary and facial interventions.

Marzola (1988) observed that accidents and complications caused by teeth extraction used to be much more frequent in the not too distant past, whereas recent advances in asepsis, antisepsis, local anesthesia, use of X-rays, and treatment, as well as the availability of more refined surgical techniques, today permit dental surgeons to intervene with safety, with a reduced number of accidents and complications. However, any lapse in terms of proper surgical technique can still cause accidents with serious consequences for the patient.

Complications arise from errors in judgment, improper use of instruments, the application of extreme force, or failure to obtain a full visualization before acting. To quote Reynolds (1974), "To do good, you must see good" or "do well what you see".

Among the many complications and accidents that may occur during or after tooth extraction. Archer (1975) mentions the penetration of an upper third molar into the pterygomandibular or infratemporal fossa and the penetration of a dental apex into the sublingual or submandibular fossa through the cortical plate of the mandible.

Shira (1972) stated that the upper third molars may also be dislodged into the maxillary sinus and that dislodgment of the lower third molar into the submandibular or sublingual fossa occurs more frequently during tooth sectioning after the tooth is freed from its adherence. Dental dislodgment to adjacent anatomical regions occurs more frequently during the extraction of upper and lower third molars due to the application of uncontrolled force or even to the weakening of alveolar bone walls (Gayotto and Gregori, 1987), or even due to the perforation of the cortical plate of bone caused by periapical infection.

According to Thoma (1969), accidental dislodgment of the maxillary or mandibular 3rd molar occasionally occurs while the teeth are being shifted or extracted. Depending on the site where it is lodged, this tooth may be easily reached by an intraoral approach and at times may be even pushed back to its site of origin by applying pressure with the finger, so that the tooth may be then removed from the dental socket itself. In other cases, dislodgment of a mandibular 3rd molar may bring the tooth below the insertions of the mylohyoid muscle, thus preventing the surgeon from reaching it by the intrabuccal route.

According to Gayotto and Gregori (1987), when maxillary 3rd molars have been dislodged to the region of the pterygoid venous plexus, they should be removed in collaboration with an experienced buccomaxillary and facial surgeon because of the risk of intense and severe transoperative hemorrhaging. Mandibular 3rd molars may slide towards the intramylohyoid region or even towards the lateropharyngeal space. When this accident occurs, the authors recommend multiprofessional participation.

According to Gayotto and Gregory (1987), the major causes of transoperative accidents in extraction of teeth are: failure to elaborate a surgical plan, insufficient or distorted radiographies, inappropriate use of surgical instruments, abrupt movements during the use of instruments, inadequate psychomotor ability of the surgeon, lack of knowledge of regional topographic anatomy.

Few reports of these accidents are available and they lack most of the information needed to obviate these situations, which are often a source of distress to those who provoke them. In view of these considerations, the objective of the present paper was to present four clinical cases related to the accidental dislodgment of third molars to adjacent anatomical regions during extraction, and the conducts followed for their resolution.

Case 1

The patient, a 17-year old white single Brazilian student, visited her dental surgeon's office for extraction of the left upper 3rd molar (vertical position) (Figure 1A). After applying local anesthesia, the dental surgeon tried to extract the tooth over a period of approximately 3 hours. In the course of this exhaustive attempt, he ended up by pushing the tooth to an inaccessible site, and at that time he decided to look for help. One member the staff of the Department of Oral Surgery (F.O.R.P.U.S.P.) was called to his office, where he noted that the patient was exhausted after her long exposure to surgery. The surgical wound was fully dilacerated and Bichat's pad had been ruptured by the abrupt movements made in the attempts to extract the tooth, causing adipose tissue to leak into regional tissues.

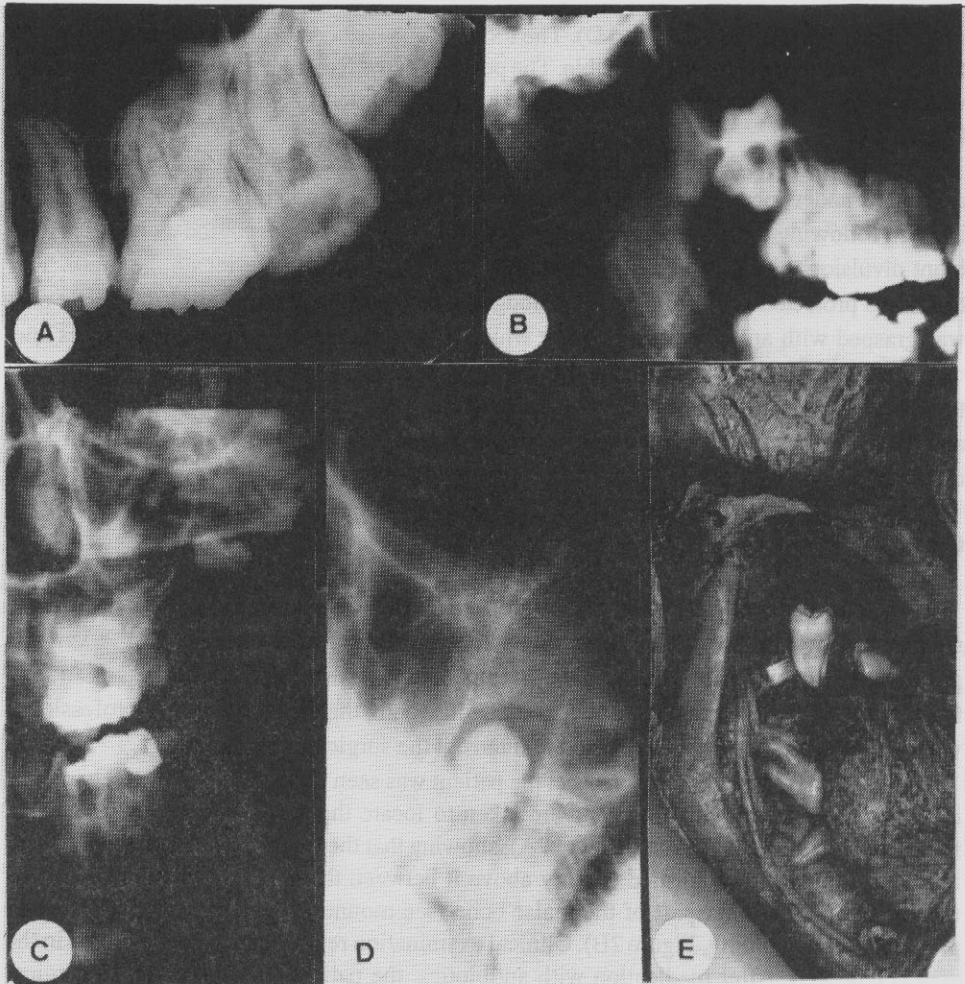


Figure 1 - A, Intra-oral dental radiograph. B, Lateral projection of skull. C, Posterior-anterior projection of mandible. D, Posterior-anterior oblique projection of face. E, Simulation in dissected anatomical preparation.

The consulting surgeon opted for tissue suture in an attempt to reestablish the anatomical limits of the area as much as possible. Surgery was interrupted, the patient was medicated with antibiotics, analgesics and anti-inflammatory drugs for 7 days and instructed to rinse her mouth with antiseptic solutions at 4-hour intervals during recovery. Her buccal commissure, which presented the formation of erosions provoked by excessive instrumentation, was treated with topical application of Omcilon A cream.

When the patient recovered the ability to fully open her mouth 10 days after the intervention, she was submitted to a new clinical examination and to radiographic location

of the lost tooth (Figure 1B, C and D). The tooth was located in the upper medial portion of the coronoid apophysis of the mandible. The position of the tooth determined by radiography was simulated in a dissected anatomical preparation in order to facilitate surgical planning (Figure 1E).

Twenty-one days after the accident, the patient was resubmitted to surgery for tooth extraction under local anesthesia. Access to the region was obtained by a linear vertical incision following the supero-anterior border of the coronoid process of the mandible. After blunt divulsion with a curved hemostatic forceps, it was possible to locate the tooth. The tooth was protected against posterior dislodgment using a Mead No. 5 angled curette and was grasped with an Allis forceps, after which it was freed from surrounding tissues and removed. The surgical wound was sutured with Mononylon 4-0 and the patient was allowed to leave. The same antibiotic medication used after the accident was maintained for an additional 14 days. The suture was removed 7 days after surgery and the patient was discharged.

Case 2

The patient, a 21-year old white single Brazilian student, visited her dental surgeon's office for extraction of an impacted maxillary 3rd left molar, in the vertical position. After routine anesthesia, in the attempt made to extract it, the tooth was dislodged from its socket. After several attempts to locate the tooth, the dental surgeon, a professional with little clinical experience, decided to interrupt the surgical intervention.

Ten days after this occurrence, the patient was seen in the clinic of the Department of Oral Surgery. Periapical X-rays were taken to locate the tooth, but only a panoramic radiograph permitted diagnosis (Figure 2A), showing that the tooth had been dislodged from its socket and was now located slightly above it between the vestibular bone floor of the tuberosity and the inner part of the malar bone (see mounting on a dissected anatomical preparation for planning, Figure 2B). Clinical examination revealed increased volume in the area (Figure 2C). After medication with antibiotics, the patient was submitted to surgical intervention under local anesthesia.

After a linear incision at the level of the sulcus of the buccal vestibule, the area was dissected and the tooth located and removed with apical curved retractors (Figure 2D and 2E), while protecting the distal part of the tooth with a model Mead no. 5 curette to prevent dislodgment towards the posterior region.

After 7 days, the suture was removed and the patient discharged (Figure 2F).

Case 3

The patient, a 31-year old white married German male, an engineer by profession, visited his dental surgeon's office for extraction of a mandibular left 3rd molar impacted in a vertical position (Figure 3A).

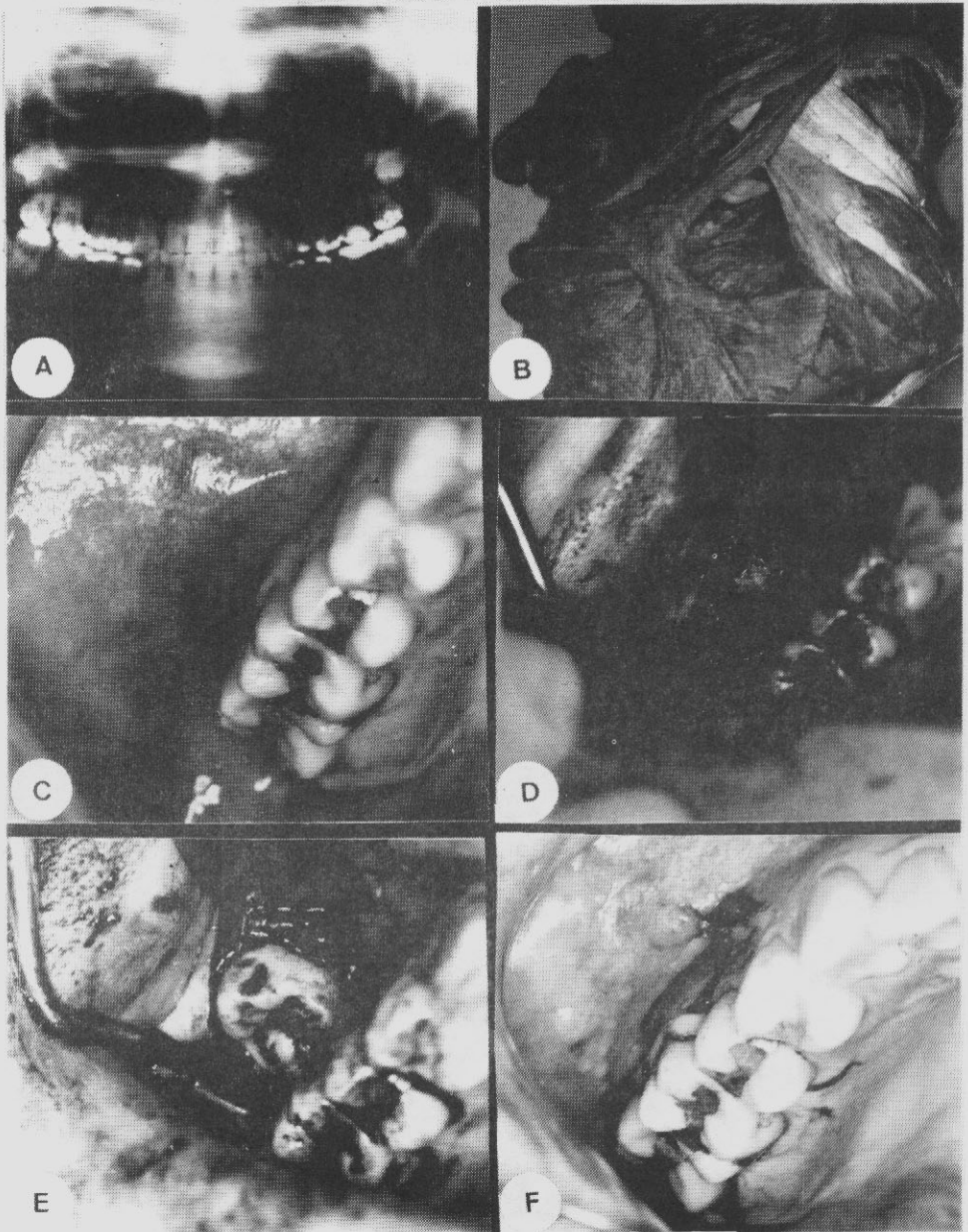


Figure 2 - A, Panoramic radiograph. B, Simulation in dissected anatomical preparation. C, Pre-operative clinical view. D, Incision and dissection. E, Tooth removal. F, Post-operative view.

After multiple attempts lasting approximately 6 hours, and a surgical control radiograph (Figure 3B), the attending dental surgeon sought the help of a surgeon from our staff. The patient, however, was no longer physically or psychologically prepared for continuation of surgery. The area was sutured, the patient was medicated with an antibiotic, analgesic and anti-inflammatory drugs, and instructed to rinse with an antiseptic mouthwash.

The patient returned 15 days after the surgical accident, but he still presented edema, trismus and difficulty in swallowing. We waited one more week and, after improvement of the clinical picture, we located the tooth radiographically and performed a simulation in a dissected anatomical preparation (Figure 3C and 3D). These procedures revealed that the tooth had been dislodged towards a region in the submandibular fossa, with the crown in the inverted position, showing the occlusal plane parallel to the lower border of the mandibular body.

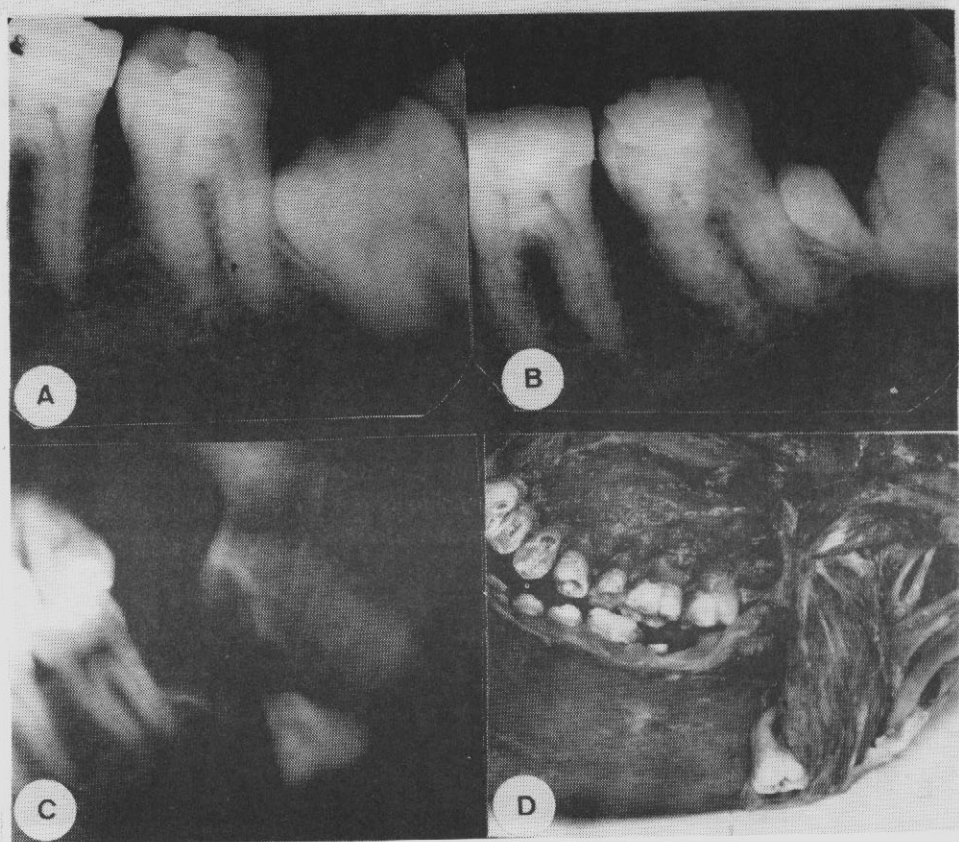


Figure 3 - A, Pre-operative intra-oral dental radiograph. B, Pre-operative intra-oral dental radiograph. C, Panoramic radiograph. D, Simulation in dissected anatomical preparation.

After routine surgical premedication and antisepsis, the patient was submitted to local anesthesia. Access to the region was obtained by a festooned incision accompanying the lingual papillae of the mandibular left first premolar up to the retromolar area of the mandibular 3rd molar on the same side. After undermining the flap, with the thumb strongly compressing the tissues of the submandibular area externally, the mouth floor became more accessible and the tooth was located due to its palpable volume. A blunt divulsion was then performed until the tooth was found and removed with the aid of a curved Kelly forceps. The region was sutured, and ten days later the patient was examined, had his suture removed, and was discharged.

Case 4

A 44-year old white married Brazilian male, a lawyer by profession, was referred by the Periodontics discipline of the Dental School of Ribeirão Preto for the possible removal of an impacted right lower 3rd molar in an atypical position near the lower border of the mandibular body, with part of its root outside this border (Figure 4A).

Clinical examination revealed a purulent exudate in the gingival region of the retromolar area. After antisepsis and local anesthesia, a Winter incision for lower 3rd molars was performed, the retromolar trigone area was dislodged and exposed, and the supracorony tissue of the tooth was eliminated. When we tried to insert a Heidbrink curve retractor close to the mesial surface of the tooth, the tooth was immediately dislodged towards the submandibular region. We widened the incision of the lingual region and dissected it until we found the tooth. The patient, however, started to feel strong nausea that prevented the continuation of surgery, which had lasted about 20 minutes. The region was sutured, the patient was allowed to leave and extraction of the tooth was postponed to another occasion.

When the patient returned 7 days later, he was apprehensive and even quite fearful, and refused to be submitted to surgical intervention for a long time since he was asymptomatic. During this postoperative period, we performed a radiographic examination to locate the dislodged tooth (Figure 4B and 4C).

It was only 3 years later that the patient returned with clinical signs of exudation in the retromolar area, and on that occasion he was persuaded about the need to remove the tooth. New X-rays were taken to locate the tooth (Figure 4D and 4E) and a simulation on a dissected anatomic preparation was mounted (Figure 4F).

The patient was submitted to antisepsis, medication with antibiotics and to surgical intervention under general anesthesia by nasotracheal intubation. The simulation permitted us to see that the crown of the tooth had again occupied part of the osseous lodge of the tooth on the lingual surface of the mandible due to muscle action, and that the crown was surrounded with newly formed bone tissue.

We prepared a route of access to the tooth with a Winter incision for impacted lower 3rd molars and with a festooned incision close to the lingual papillae of premolar and molar

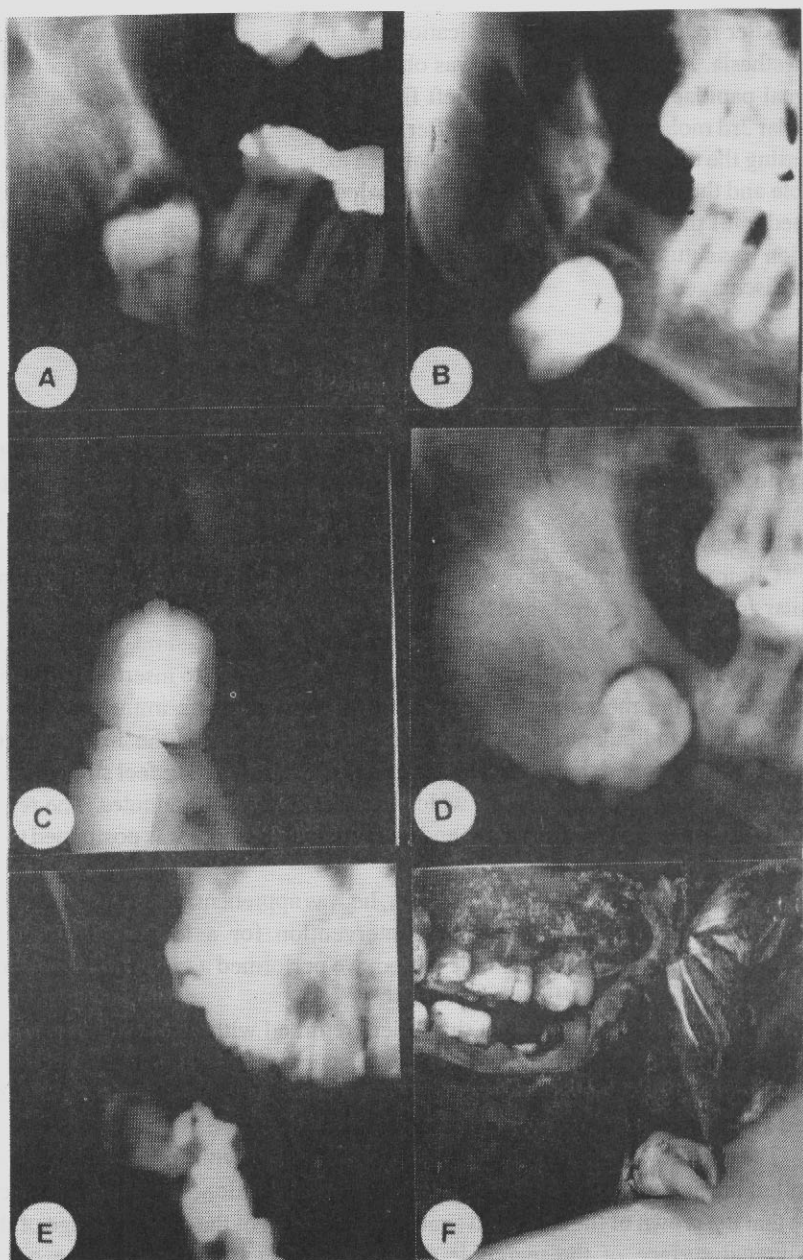


Figure 4 - *A*, Pre-operative panoramic radiograph. *B*, Panoramic radiograph, 7th post-operative day. *C*, Mandibular occlusal view, axial. 7th post-operative day. *D*, Panoramic radiograph, three years later. *E*, Anterior-posterior skull projection, three years later. *F*, Simulation in dissected anatomical preparation.

teeth and dislodgment of the flap. We then removed bone tissue by the buccal and alveolar route in order to free the crown of the tooth from mandibular bone tissue.

We protected the sublingual region with an Obwegeser angled retractor and moved the tooth towards the sublingual space by pushing it through the access on the buccal side. When the tooth encountered the inclined blade of the retractor it slid towards the uppermost part of the medial surface of the mandible, was grasped with an Allis forceps and extracted.

After treatment of the cavity, the region was stitched with polyvicryl 3-0 sutures. Seven days after surgery, the patient was seen at the outpatient clinic and discharged.

Discussion

The tooth extraction accidents described here confirm reports by others cited in the present article. In most cases, these accidents occur because of lack of observance of basic precepts, with an imprecise diagnosis, poor selection of a surgical technique, improper and incorrect use of surgical instruments, and finally a lack of ability and poor knowledge of anatomy on the part of the dental surgeon.

The present report also emphasizes the importance of diagnosis and of judicious surgical planning allied to the observance of principles of surgical technique and appropriate training of the dental surgeon.

In cases of tooth dislodgment to an adjacent anatomical space, Shira (1972) recommends extraction immediately after the accident, except for maxillary third molars located in the infratemporal fossa, for which he recommends postponing the intervention for a few weeks. According to the author, attempts to remove the tooth immediately after the latter type of accident may dislodge it even more deeply, further complicating the situation. The reason for postponing the extraction is to permit the occurrence of fibrosis around the tooth which will prevent or hamper its movement or dislodgment during extraction.

Kohn et al. (1973) also recommend postponement of extraction for a few weeks in cases of accidentally dislodged teeth since, theoretically, the tooth, by behaving as a foreign body inside the tissues, will provoke the formation of a surrounding fibrosis which should reduce mobility and therefore facilitate later extraction.

In our opinion, whenever possible these accidents should be obviated during the same surgical intervention, avoiding additional surgery. However, surgical time, conditions at the surgical site, and mainly patient cooperation are all factors to be taken into consideration. On a common sense basis, the patient should be attended within a time as close as possible to the time of the accident, following the guidelines and postoperative care described in the present report.

We agree with Graziani (1976) when he states that there could be no worse qualities than daring or courage in a surgeon practicing his specialty. Rather, the basic requirements for a good professional are knowledge of the scientific principles that govern and guide his procedures, as well as caution and ponderation.

Conclusion

The authors conclude that accidents may occur under different circumstances, especially when the professional overlooks diagnosis and/or surgical planning of the case. They recommend that these accidents be resolved by a highly qualified buccomaxillary and facial surgeon working as part of a team and following a specific routine for the emission of a precise diagnosis and of a plan to resolve the accident. They recommend that young and inexperienced dental surgeons do not venture to undertake unguided surgical work for which they are not yet qualified.

Acknowledgments

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