

# ORAL SURGERY CARE



Summer 2021

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Happy Summer!

The first two articles in our quarterly newsletter describe different approaches for retrieving a broken needle. While these are largely academic since most dentists go their entire career without losing a needle within the soft tissues, you can take some simple steps to increase your odds of staying in the group that never sees it. As with most complications, awareness and prevention are the best remedies. When they occur, broken needles are usually associated with inferior alveolar nerve blocks and bent needles.

If a needle breaks, it's usually right at the hub. Minimize your risk for this extremely rare event (1 in 14 million mandibular nerve blocks) by using a needle length you don't need to bury to the hub for your chosen technique.

If you must bend the needle, avoid bending right at the hub. If a needle breaks and the proximal end is visible, quickly grasp with the closest available instrument (hemostat or comparable) and remove, before the patient moves and the fragment disappears. Retrieval of a submerged needle is usually recommended to avoid migration and subsequent damage to sensitive anatomic structures, and is usually done at a tertiary referral center with the necessary resources and equipment. While I hope you never have the need, I would be happy to facilitate getting your patient to the right facility.



Oral Surgery Care

As always, we truly appreciate your trust in us in caring for your patients. Call whenever we can help.

Best Regards,

*Dr. Brent Florine*

breakages are more common with smaller diameter needles and often tend to break at the hub of the needle. Breakages occur during inferior alveolar nerve blocks for a multitude of reasons, including improper technique (ie, bending the needle), inappropriate armamentarium or using a 30-gauge needle despite no difference in pain, and unexpected patient movement, commonly seen when working with the pediatric population. Typical complications of needle breakages include pain, trismus, infection, and migration of the needle causing dysphagia, stress, and anxiety.

Fluoroscopy shows a continuous, real-time radiographic image of the broken needle on a monitor. Using biplanar fluoroscopy, 2 C-arms are used to effectively create a 3-dimensional (3D) map. The typical fluoroscopic entrance exposure rate for a medium-sized adult is approximately 30 mGy/minute, but these rates can be higher in image-recording modes. In biplanar fluoroscopy, this dose is effectively doubled. The patient in this study received a radiation dose of 837 mGy during the procedure. Comparatively, a panoramic radiograph is 2.7 to 23 mGy, a face CT ranges from 1,000 to 2,000 mGy, and a maxillofacial cone beam computed tomography ranges from 30 to 1,073 mGy. The investigators gave just less than 1 Gy of radiation as the beam was collimated to avoid irradiation of the eye and was changed multiple times to avoid repeated dose in the same skin area.

The amount of radiation from such a procedure is similar to what is given during a standard neuro-interventional procedure. Currently, there are no formal recommendations on the maximum amount of radiation to be given to children; however, it is recommended to follow the as low as reasonably achievable principle. *Retrieval of a broken needle using biplanar fluoroscopy proved to be useful and effective. This technique limited trauma to the soft tissue and proved to be safe in avoiding injury to vasculature and surrounding vital structures. Further research is necessary to determine efficacy and safety of radiation exposure in this technique for adults and children.*

## Use of Intraoperative Biplanar Fluoroscopy for Minimally Invasive Retrieval of a Broken Dental Needle

Alexander Margolis, Alyssa Loparich  
*J Oral Maxillofac Surg* 78:1922-1925, 2020

This report describes a case of needle breakage during a left-sided inferior alveolar nerve block to perform restorative dentistry on a 56-year-old male patient. The needle was removed in conjunction with interventional neuroradiology using biplanar fluoroscopy. Needle breakage during inferior alveolar nerve blocks is an extremely rare event and has decreased in incidence since the use of single-use disposable needles. Needle



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## Fractured Needle Removal With a 3-Dimensionally Printed Surgical Guide

Driesen Lukas, Meeus Jan, et al.  
*J Oral Maxillofac Surg.* 2020 May;79(5): 1-6

**N**eedle breakage is a rare complication of inferior alveolar nerve block anesthesia. This study proposed a new localization technique. The authors used a three-dimensionally printed surgical guide, supported by the lower dental arch to minimize the required surgical access. With this approach, the procedure could be performed with procedural sedation anesthesia. The incidence of needle breakage has declined since the 1960s, with the introduction of flexible alloys and standardized disposable hypodermic needles. Statistically, the current estimated risk of needle breakage is 1 in 14 million inferior alveolar nerve blocks (IANBs). Most needle breaks (70%) occur during an IANB administration. Needle fracturing is thought to be caused by manually bending the needle, incorrect choice of the needle dimensions, or abrupt movements by the patient or staff.

In nearly all published cases, when the needle fragment was buried in the tissue, it was surgically removed to avoid potential life threatening complications, such as infection and needle migration through vital structures. In addition, pain, trismus, and psychological symptoms can occur when a sharp, foreign object is located in the body. The intraoperative localization of a needle fragment in the pterygomandibular space is challenging, owing to the small needle dimensions, and the impossibility of palpating the foreign body. Therefore, various localization techniques have been suggested. *Localizing dental needle fragments without supplementary devices is a challenging task, owing to the small needle diameter. Various techniques are available, but they are primarily performed under general anesthesia. This study demonstrated that an occlusal-supported 3D-printed surgical guide allowed precise retrieval of a dental needle lodged in the pterygomandibular space. Needle fracture should be prevented, in the first place, by respecting all precautions.*

## Direct Oral Anticoagulants and Medical Comorbidities in Patients Needing Dental Extractions: Management of the Risk of Bleeding

Nadia Cocero, Michele Basso, et al.  
*J Oral Maxillofac Surg* 2020 Mar;77(3):463-470

**T**he purpose of this study was to measure the frequency of bleeding during and after tooth extraction in patients exposed to direct oral anticoagulants (DOACs) and identify risk factors for prolonged or excessive bleeding. This retrospective cohort study involved 100 patients who underwent tooth extractions according to the European Heart Rhythm Association protocol: continuation of DOAC therapy for extractions of up to 3 teeth in the same session performed at the (presumed) time of DOAC trough concentration. The authors respected an interval of at least 4 hours between extraction

and last DOAC intake. The outcome of interest was incidence of mild, moderate, and severe bleeding during the intervention and in the 7-day follow-up period. Data analysis considered the presence of comorbidities as the primary predictor for bleeding; additional predictors were age, gender, type of comorbidity, indication for DOAC therapy, DOAC agent, and extraction of contiguous teeth.

Of the patients, 64 had comorbidities (diabetes in 50%). The distributions of demographic, clinical, and dental variables were similar for patients with and without comorbidities. The authors observed 4 bleeding episodes (1 moderate episode 1 hour after the extraction and 3 mild episodes the day after the extraction) in the comorbidity group and none in the non-comorbidity group (4 of 64 vs 0 of 36; overall bleeding rate, 4 of 100). The factor significantly triggering bleeding in patients with comorbidity was extractions of couples and triplets of multirooted teeth. *The investigators conclude that tooth extractions in patients with comorbidities taking DOACs may be safely managed as long as they are performed at least 4 hours after the last DOAC intake and do not involve 2 or 3 contiguous premolars and molars.*

## Alveolar Osteitis: A Review of Current Concepts

Oliver Chow, Rowena Wang, et al.  
*J Oral Maxillofac Surg* 2020 Aug;78(8):1288-1296

**T**he purpose of this study was to explore the pathogenesis and etiology of alveolar osteitis (AO) to obtain a more intuitive understanding of the clinical prevention and management of the condition. The different treatment modalities were discussed through both the mechanistic understanding of AO and the evidence regarding the different modes of prevention and management. The Ovid Medline, PubMed, and Cochrane Central Register online databases were used to complete an advanced search using the MeSH term "dry socket," generating 756 results.

A total of 8 studies on the prevention of AO were included, with 66 studies included for review of the reported data overall. The information was categorized into incidence, etiology and pathogenesis, prevention, and management. The relevant background information and evidence for each category were summarized. Understanding of the pathogenesis and etiology of AO has improved in recent years, which has been helpful for developing effective evidence-based treatment and prevention of the condition. *Clinicians should be aware of the complexity and multifactorial nature of the etiology of AO and the current concepts regarding the prevention and treatment of AO.*

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