COMMUNICATION

Instrumentation in Maxillofacial Surgery: Few Practical Tips

Raghav Shrotriya, Vinita Puri

Department of Plastic Surgery, Seth GSMC and KEM Hospital, Mumbai, India

Correspondence: Raghav Shrotriya
Department of Plastic Surgery, KEM Hospital, Gynec. Wing, 2nd floor, Parel, Mumbai. 400012, India
Tel: +91-2224017812, Fax: +91-2224017218, E-mail: dr.raghav.s@gmail.com

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Abstract:

When a newly inducted plastic surgery resident embarks on maxillofacial surgery, with drills, screws, plates and burrs, it seems like a new domain altogether. As a new resident, it is truly fascinating as to how such wide variety of bony work is done without scarring over the face. Here we discuss a few practical tips which the author has learned during his surgical sojourn in residency. It is hoped that the readers who are new to maxillofacial surgery, shall find these useful.

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When a newly inducted plastic surgery resident embarks on maxillofacial surgery, with drills, screws, plates and burrs, it seems like a new domain altogether. As a new resident, it is truly fascinating as to how such wide variety of bony work is done without scarring over the face. Here we discuss a few practical tips which the author has learned during his surgical sojourn in residency. Most of these things are standard textbook knowledge but are sometimes neglected inadvertently by the surgeons. It is hoped that the readers who are new to maxillofacial surgery, shall find these reminders useful.

Drilling the bone is a part of many surgical procedures like maxillofacial fracture fixations, orthognathic surgeries or fixation of implants and grafts using screws. Optimal results in all these endeavours demand good purchase of screw with strong bone stock. Drilling of the bone produces heat by virtue of frictional interaction between the drill bit and the bone. Studies have shown that any bone that heats up beyond 40 degrees undergoes necrosis and decreased new bone formation, and consequent bone weakening and screw failure. Therefore, continuous saline irrigation is of paramount importance [1,2]. Unless the irrigated water is able to flow away, it tends to pool up in the surgical field compromising visibility. To avoid this, continuous suction should accompany irrigation. Another reason for not allowing the water to stand is that it rapidly heats up and the process of irrigation loses its effectiveness. It is important to ensure that the drill bit is sharp as a blunt drill bit increases the frictional damage to the bone.

Appearance of a cloud of bone powder accompanied by its characteristic smell is an indicator that the irrigation is not reaching the right place and warrants immediate cessation of drilling and repositioning of the irrigating cannula. Also, it is a good practice to make sure that the irrigation starts a split second before the drill hits the bone. This will minimise the damage to the bone being drilled in the time lag that may ensue. During intraoral drilling, if the visibility is low, irrigate on the drill bit rather than irrigating blindly to be sure that the water jet reaches the site of drilling. Very high speed drilling causes excessive rise of temperature of bone in spite of irrigation. Therefore it is important to use moderate drilling speeds (around 2,500 rpm) which are just enough to achieve our target of drilling without application of excessive force [3].

It is also worthwhile to make sure that the person holding the drill should be the one to have the control of the foot-pad (if it is so controlled) for achieving better control and avoiding inadvertent errors due to in coordination. These recommendations are rendered redundant in the newer high end machines with hand controls and attached irrigation.

The surgeon should insist on separate instrument set for intra-oral and extra-oral fields so that contamination and consequent infection is minimised [4]. It should also be impressed on the scrub nurse not to pass the implants from trolley to surgical field directly over the floor lest the precious implant falls and is rendered unsterile. The use of head light facilitates visualisation in difficult and deep intra-oral surgery, and obviates the need for repeated reorientation of overhead lights. The surgeons should always wear eye shields to safeguard their eyes from splashed blood or contaminated irrigant from the surgical field. Since maxillofacial surgeries constantly expose the surgeons to the risk of injuries due to wires [5], it is critical that care be taken to properly twist and cut all free wire ends. Also, it is imperative that all assistants wear gloves of proper size and there should be adequate soft tissue retraction to avoid inadvertent entanglement of soft tissue, loose gloves or gauze in the drill or the rotating burr.

Lastly, while using a burr, the irrigant should be at a distance of half a centimetre away from the area being burred so as to minimise the splashing that occurs if irrigant is directly put over the rotating burr. These are few basic tips which if kept in mind and followed in practice, will make the life of the surgeons easier while also optimising the surgical results.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

References

1. Eriksson RA, Adell R. Temperatures during drilling for the placement of implants using the osseointegration technique. J Oral Maxillofac Surg 1986;44:4-7.
2. Eriksson RA, Albrektsson T. The effect of heat on bone regeneration: an experimental study in the rabbit using the bone growth chamber. J Oral Maxillofac Surg 1984;42:705-11.
3. Pandey RK, Panda SS. Drilling of bone: A comprehensive review. J Clin Orthop Trauma 2013;4:15-30.
4. Pabari M, Shrotriya R. Change of Instruments in Maxillofacial Surgeries: A Rule Oft Forgotten. J Maxillofac Oral Surg 2016;15:563-4.
5. Bali R, Sharma P, Garg A. Incidence and patterns of needlestick injuries during intermaxillary fixation. Br J Oral Maxillofac Surg 2011;49:221-4.