The Art of Reducing Bleeding During Endoscopic Sinus Surgery

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Abstract

This article discusses the importance of anesthesia in endoscopic sinus surgery. Bloodless field is rather vital during endoscopic sinus surgical procedures. Advantages of having a bloodless field during surgery are: reduced incidence of complications, reduced operating time. Major aim of anesthetist in FESS should be to reduce blood pressure to such a level that bleeding is minimized. This article discusses the importance of anesthesia in endoscopic sinus surgery. Major aim of anesthetist in FESS should be to reduce blood pressure to such a level that bleeding is minimized. The other aspect of reducing bleeding during endoscopic sinus surgical procedure is preparation of nasal mucous membrane. Various steps that can be followed to reduce bleeding during endoscopic sinus surgery are:

1. Mucosal preparation
2. Hypotensive anaesthesia
3. Positioning of the patient
4. Good anatomical knowledge
5. Use of proper instruments

Introduction

Bleeding is one complication that could increase the risk of complication during endoscopic sinus surgery. Considerable amount of attention should be paid to reduce bleeding on the table during the surgical procedure. Dry surgical field not only improves visibility during endoscopic sinus surgery, it also shortens the duration of surgery. In this regard both anesthesiologist and the operating surgeon have a vital role to play. Endoscope becomes rather useless when the operating field bleeds. Bleeding is more common if surgery is performed on allergic / inflamed nasal mucosa. This is where operating surgeon should take extra precaution in preparing the patient. Reduction of nasal allergy and inflammation is also known as mucosal preparation prior to surgery. This is done by administering a course of antibiotic, antihistamine and topical steroid spray. Ideally patient should be prescribed these medications at least 1 week prior to surgery.

Causes of bleeding during FESS

Bleeding is more common close to large vessels. Stamberger has included 4 areas which are responsible for extensive bleeding during endoscopic sinus surgery.

1. Anterior ethmoidal artery located in an osseous channel close to ethmoid roof
2. Branch of sphenopalatine artery close to the posterior end of middle turbinate. This is more prone for injury in patients with well pneumatized middle turbinate (concha bullosa)
3. Damage to sphenopalatine artery while attempting to widen the sphenoidal ostium

Classification of surgical bleeding during endoscopic sinus surgery:

Surgical bleeding during FESS has been classified into:

1. Arterial
2. Venous
3. Capillary

Out of these three types of bleeding it is the capillary bleed that causes the most trouble during FESS. Capillary bleeding can be reduced considerably by careful packing of the nasal cavity with cotton pledgets/neuropatties soaked in 4% xylocaine mixed with 1 in 10000 adrenaline. This concentration is being used by the author with great degree of success. The concentration of adrenaline is the source of raging controversy. One aspect should be clearly borne in mind, never exceed 7 ml of 4% xylocaine while packing. Any volume about 7ml should prove to be toxic to the patient.

Steps to reduce bleeding during surgery

Patient position: This plays a vital role in reducing capillary bleed. If the
surgical field is kept above the level of the heart blood flow to the heart is considerably reduced. This is also known as postural ischemia. Systolic pressure has been estimated to reduce by 2 mm of mercury for every 2.5 cms of head elevation. Ideally during endoscopic sinus surgery the head of the patient is in an elevated position capillary bleeding will be reduced a lot.

Maintaining normal body temperature:
During surgical procedure maintaining normal body temperature is very important. Significant levels of hypo/hyperthermia can affect platelet function causing increased bleed during the procedure.

Role of anesthesiologist:
Anesthesiologist play a vital role in reducing blood loss during surgery. Bleeding is directly proportional to the mean arterial pressure. As long as the mean arterial pressure is held within a low range bleeding will be minimal. Use of intravenous anesthetic agents like Propofol can reduce bleeding when compared to that of conventional inhalational agents. Propofol is known to reduce brain metabolism and its circulation. Maximum bleeding during Fess occurs from central vessels. Thus it plays a vital role in reducing bleeding. Use of propofol with fentanyl supplementation actually serves the purpose. Even sevoflurane is known to increase bleeding during Fess.

Use of Nitroglycerine infusion:
Nitroglycerine infusion during surgery causes prolonged hypotension. Only flip side to the use of NTG drip is compensatory tachycardia which can push up the blood pressure. This tendency of compensatory tachycardia is commonly seen in young individuals. This can be obviated by putting the patient on preoperative night dose of beta blockers. Captopril can be used on the table to reduce the hear rate that could occur due to NTG drip. If the patient is under prolonged hypotension, their status should be meticulously monitored.

References

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