



Postadenoidectomy hemorrhage: a two-year prospective study

Krvarenje posle adenoidektomije: dvogodišnja prospektivna studija

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Abstract

Background/Aim. Although postoperative complications are rare, postadenoidectomy hemorrhage is one of the most frequent. The aim of this prospective study was to evaluate the incidence and timing of postadenoidectomy hemorrhage requiring hemostatic control under endotracheal anesthesia. **Methods.** A two-year prospective study of patients undergoing inpatient adenoidektomija, with ($n = 462$) or without tonsillektomija ($n = 589$), was undertaken. Surgery was performed in endotracheal anesthesia using an adenoid curette. Every bleeding event which needed procedure in general anesthesia for its treatment was recorded. The timing of postadenoidectomy hemorrhage was classified as primary or secondary. **Results.** Severe bleeding following adenoidektomija with tonsillektomija which needed hemostatic control under endotracheal anesthesia occurred in only 0.19% (2/1051) patients (average age = 7.5 years). Postadenoidectomy hemorrhage was primary in both of the patients. **Conclusion.** Severe postoperative hemorrhage requiring hemostasis under endotracheal anesthesia can be expected in a small number of children undergoing adenoidektomija with tonsillektomija.

Key words:

adenoidektomija; tonsillektomija; postoperativne komplikacije; krvarenje; incidenca; child; adult.

Apstrakt

Uvod/Cilj. Iako su postoperativne komplikacije retke, jedna od najčešćih komplikacija je krvarenje posle adenoidektomije. Cilj ove prospektivne studije bio je da se utvrdi učestalost i vreme krvarenja posle adenoidektomije koje zahteva intervenciju u opštoj endotrahealnoj anesteziji. **Metode.** Ovom dvogodišnjom prospektivnom studijom obuhvaćeni su svi bolesnici kojima je načinjena adenoidektomija sa ($n = 462$) ili bez tonsilektomije ($n = 589$). Adenoidektomija je načinjena u opštoj endotrahealnoj anesteziji pomoću adenotoma. Beleženo je svako postoperativno krvarenje koje je za postizanje hemostaze zahtevalo opštu anesteziju. Vreme krvarenja posle adenoidektomije klasifikovano je kao primarno i sekundarno. **Rezultati.** Krvarenje posle adenoidektomije koje je zahtevalo hemostazu u opštoj anesteziji zabeleženo je kod 0,19% (2/1051) bolesnika prosečne starosti = 7,5 god, kojima je urađena tonsiloadenoidektomija. Kod oba deteta krvarenje je bilo primarno. **Zaključak.** Ozbiljno postoperativno krvarenje koje zahteva hemostazu u opštoj endotrahealnoj anesteziji može se retko očekivati kod dece kojoj je učinjena adenoidektomija sa tonsilektomijom.

Ključne reči:

adenoidektomija; tonsilektomija; postoperativne komplikacije; krvarenje; incidenca; deca; odrasle osobe.

Introduction

Adenoidektomija with or without tonsillektomija, remains to be one of the most frequently performed surgical procedures in ear, nose, and throat (ENT) speciality. Although the number of procedures has significantly decreased over the past century, adenoidektomije are still commonly performed surgeries in the pediatric group. Hypertrophy of nasopharyngeal tonsil is the most common cause of nasal obstruction in children. When the obstruction of the nasopharynx causes recurrent infections of upper respiratory tract, chronic otitis media secretoria or sleep apnea, then adenoidektomija, with or without tonsillektomija, is indicated.

Although adenoidektomija is much safer surgical procedure than tonsillektomija, and the postoperative complications are rare, postadenoidectomy hemorrhage is one of the most frequent and potentially life-threatening complications. A recently published study of posttonsillektomija and postadenoidectomy hemorrhage confirms that adenoidektomija has a markedly lower hemorrhage rate than tonsillektomija¹. Hemorrhage following adenoidektomija can vary from mild bleeding stopping spontaneously to profuse bleeding demanding blood transfusion and surgical procedure in general anesthesia to achieve hemostasis.

The aim of this study was to determine the frequency of postadenoidectomy hemorrhage in the unselected pa-

tients that required surgical treatment under general anesthesia.

Methods

This two-year prospective study was conducted in the Ear, Nose and Throat (ENT) Department, University Hospital "Zvezdara", Belgrade. The study included 1,051 consecutive patients undergoing inpatient adenoidectomy with ($n = 462$) or without tonsillectomy ($n = 589$). There were 1,042 children (≤ 15 years) and 9 adults (> 15 years).

Indications for adenoidectomy were recurrent otitis media, otitis media with effusion and hypertrophy of the adenoids (obstruction of the upper airways and sleep disorders). There was no patient with coagulation disorder. Prior to surgery, the patients with chronic diseases were in a stable condition.

Children and adults were admitted to the Department one day prior to surgery and had a physical examination, as well as complete blood count and differentiated white blood cell counts, sugar, urea and creatinin levels, bleeding, prothrombin and partial thromboplastin time and urin analysis.

Adenoidectomy was performed in endotracheal anesthesia with oral intubation in Rose's position with retroflexion using a Crowe-Davis gag in suspension. Following palpation of the soft and hard palate, adenoids were removed with an adenotom under optic control *via* a mirror and intraoperative hemostasis was done by temporary application of a cotton swab in nasopharynx.

Traditionally, patients begin to drink liquid two hours after surgery and they can eat soft food. All patients received antibiotics routinely. In the absence of complications, children and adults were dismissed next day.

Any bleeding events noted by the patients, parents or the staff were recorded regardless the intensity or measures needed for its treatment. Also, timing of bleeding and measure needed for postoperative haemostasis were recorded. The timing of posttonsillectomy hemorrhage was classified as primary (≤ 24 hours) or secondary (> 24 hours).

After discharge, all the patients were advised to return immediately if any bleeding appeared, and were followed up for two months.

Statistical analysis was performed by the IMSL routines for statistical analysis (IMSL Inc, 1989).

Results

This two-year prospective study included 1,051 patients, aged from 1 to 21 years ($\bar{x} \pm SD = 6 \pm 3$ years), undergoing inpatient adenoidectomy with ($n = 462$) or without adenoidectomy ($n = 589$). There were 99% children (≤ 15 years) and 1% adults (> 15 years).

In 0.19% (2/1051) of the patients, serious postoperative bleeding requiring the second general anesthesia for revision surgery and postnasal pack occurred. In this two-year study no blood transfusions, ligature of external carotid artery and death were recorded.

Postadenoidectomy hemorrhage was primary in both of the patients and it occurred between 1 and 9 hours

($\bar{x} \pm SD = 4 \pm 2$ h). Secondary hemorrhage was not recorded in this study.

Both of the children who experienced postadenoidectomy bleeding had tonsilloadenoidectomy and were aged 6 and 9 years ($\bar{x} = 7.5$ years). Bleeding was recorded in 0.23% (1/432) of girls and 0.16% (1/619) of boys with no significant difference (χ^2 test, $p = 0.64$).

Discussion

In accordance with the current literature²⁻⁴, present study confirms that bleeding following adenoidectomy is a rare complication of this surgical procedure, and usually occurs in the first postoperative hours. In almost all the patients it is related to adenoid remnants. Usually, residual tissue was found close to the choanas and adjoining the torus tubarius. Removal of these remnants under the second general anesthesia and postnasal pack is the treatment of choice.

Whether performed alone or in association with tonsillectomy, adenoidectomy is one of the most common surgical operations in pediatric otolaryngological practice. The incidence of hemorrhage following adenoidectomy is reported to be from 0% to 0.49%²⁻⁴. Although postadenoidectomy hemorrhage could be serious and life-threatening, most often it does not require any medical treatment.

Perioperative hemorrhage following curettage adenoidectomy is self-limiting in most cases. In the rare cases of persistent bleeding, it can usually be controlled under direct visualization by temporary packing with a swab impregnated with epinephrine.

Death due to adenoidectomy, with or without tonsillectomy, is caused by bleeding with or without aspiration to the lung, complications of anesthesia and medications, and unidentified causes. Twenty years ago, Rasmussen⁵ reported that deaths after adenoidectomy alone have occurred, although the last one was recorded in the Danish medico-legal files in 1939. Recently published papers described in extremely rare case of postadenoidectomy hemorrhage which required ligature of external carotid artery⁶ and one death related to anesthesia and medications^{7,8} and one death due to severe hemorrhage after adenoidectomy⁹.

Postadenoidectomy bleeding can almost always be managed by topical compression with postnasal pack, although a second anesthesia can be used if necessary for the removal of any adenoidal remnants. Postnasal packs are usually effective for achieving hemostasis. Standard nasal packs are inserted through the mouth and secured by strips of tape that run anteriorly through both sides of the nose across the columella. Another piece of tape is brought out through the mouth and usually secured to the cheek. In Great Britain, 87% ENT surgeons prefer to manage primary hemorrhage with postnasal packs and 78% would use an overnight post-nasal pack¹⁰.

In the present study, no bleeding was noticed following adenoidectomy without tonsillectomy. Postadenoidectomy bleeding was recorded in the two children who had undergone adenoidectomy with tonsillectomy. This could be due to impatience, and especially to inexperience of younger surgeons who leave residual adenoid tissue close to the choanas or adjoining the torus tubarius.

Conclusion

A low incidence of postoperative bleeding requiring treatment under second endotracheal anesthesia confirms that

adenoidectomy continues to be a very secure surgical procedure. Postadenoidectomy hemorrhage usually occurs in the first postoperative hours in children undergoing adenoidectomy with tonsillectomy.

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