

# Evaluation of hemostatic and analgetic effects of platelet rich plasma in tonsillectomy

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## Abstract

The author designed a study to assess hemostatic and analgetic effects of platelet rich plasma in tonsillectomy. The study was carried out on 85 patients with recurrent tonsillitis, who underwent cold dissection tonsillectomy under general anastasia. PRP in membrane form was introduced only in one randomly chosen tonsillar niche, while the other served as control. In postoperative period nine cases of tonsillar hemorragia were registered, all from control niches. Postoperative pain was evaluated by ten-grade visual-analog scales for each side separately. Pain scores reached statistical significance. There appears to be advantage to the use of PRP in tonsillectomy, but further investigations are necessary.

The work was done in Department of Otorhinolaryngology of Kuban medical university.

## INTRODUCTION

Chronic tonsillitis is one of the most widespread diseases among general population, especially children. Despite advances in medical therapy, tonsillectomy continues to be the major treatment of this condition. But as any other surgery it has its own significant complications. Such as bleeding, general malaise, sore throat, fever and malodorous breath. Among these complications bleeding and sore throat are the most challenging both for surgeon and patient. Immediate (<24 hr) and delayed (>24 hr) postoperative bleeding rates of 2 to 5% are considered acceptable; postoperative pain, while variable in intensity and duration, typically lasts for 7 to 10 days after surgery and is moderately severe.

Although, considerable amount of special methods were suggested over the past years to prevent postoperative bleeding and decrease pain after tonsillectomy, as practice and clinical studies shows they don't have sufficient effect. Also the medical literature contains conflicting reports about new techniques of tonsillectomy with electrocautery, coblation, laser or power instrumentation, and whether they have any positive effect on these two parameters comparing to a classic cold dissection technique or not [2, 6].

One of the perspective directions in studies dedicated to natural biological factors of human body is application of

platelet rich plasma (PRP) in practical medicine [4, 5]. PRP is an autologous source of platelet-derived growth factors that is obtained by sequestering and concentrating platelets. Major property of PRP is three to five times more platelets in it than in initial blood. Because of this high platelet concentrate, it has intense hemostatic effect, also growth factors in alpha granules provide faster local tissue repair. Besides, it has no toxicity, no potential risk of infection transmission, it seals in minutes and in several days resorbs.

The objective of our trial was examination of PRP as a bleeding prophylaxis and analgetic agent in tonsillectomy.

## MATERIALS AND METHODS

The study was carried out on 85 patients with recurrent tonsillitis, who underwent cold dissection tonsillectomy under general anesthesia. Our protocol involved using PRP only on one side (tonsillar niche) of each patient. We appropriate informed consent and briefly described the procedure, but we did not inform our patients about which side would be used for PRP placement. This decision was made randomly and documented in each case.

PRP was prepared from autologous blood which was gained before surgery. We used the single-centrifugation method described by Adda F. in 2001 [1]. Blood was centrifuged in Vaccum single-use containers and activated. In this stage we gained a clot which forms, after squishing between two glass surfaces, was convenient enough for use in tonsillar niches (Pic. 1, 2). After tonsills have been removed,

hemostasis was achieved by packing and electrocoagulation. PRP in membrane form was placed in elected niche and covered by swabb for better fixation. Five minute later swabb was removed, PRP was firmly fixed in niche.

**Figure 1**

Picture 1: PRP clot.



**Figure 2**

Picture 2: PRP in membrane form



In postoperative period every case of tonsillar hemoragia was registered. We used five grade classification of bleeding severity [7]. This classification presumes: 1 grade – no manipulation required (spontaneous cessation); 2 grade – required manipulations under infiltration anesthesia; 3 grade - treatment under general anesthesia; 4 grade – ligation of the external carotid artery; 5 grade - lethal outcome.

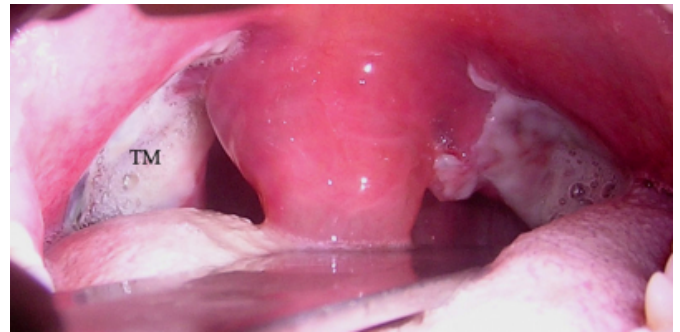
Postoperative pain was evaluated by ten-grade visual-analog scales. Patients ranked pain for each side separately (left and right tonsillar niche).

## RESULTS

PRP membranes did not show any dislocation during 4-5 postoperative days, until their complete resorbtion. Picture 3 shows pharynx 24 hours after tonsillectomy. In this case PRP was placed in right tonsillar niche.

**Figure 3**

Picture 3: Pharynx 24 hours after tonsillectomy. TM – PRP in membrane form.



Nine cases of tonsillar hemoragia were registered our group, each of them during first 24 hours after surgery, and all from control niches. According to the abovementioned classification, 3 cases were first grade; 4 cases – second grade; and 2 cases – third grade.

Pain scores at 24 hours postoperatively was ranged from 3 to 7 (mean: 4.1) for PRP tonsillar niche side, and 4 to 10 (mean: 7.3) for control niche side. The difference reached statistical significance, but clinically difference wasn't quite obvious.

## DISCUSSION

Otolaryngologists and patients alike would be grateful for the introduction of any method that would decrease the morbidity of tonsillectomy and increase its safety. of Numerous reports have been published which convince us of positive effects of PRP. We must not forget that posttonsillectomy wound care substantially differs from postoperative care of other types of surgery in which a wound is closed and unexposed. After tonsillectomy pharynx is left with relatively large and raw superior constrictor muscle, and therefore it must heal by secondary intention in the contaminated oropharyngeal environment.

Method that can close tonsillar niches after surgery and so decrease the influence of all negative factors results, of course, in better wound healing. If this procedure is technically simple, and the substance which close the wound does not have any adverse effects, this method becomes even more interesting. The percentage of postoperative bleedings

in our study was relatively high, but there was no one from niches where PRP was used. Though this result is rather optimistic, further investigations on larger groups of patients are necessary. Also, as pain scores which were measured by visual-analog scales had some differences (statistical significance) between one niche side and another, it can be assumed that using PRP on both sides gives better results comparing to the scores gained after tonsillectomy without PRP.

### **References**

1. Adda F. Concentres plaquettaires & Platelet rich fibrin : une nouvelle strategie en paro-implantologie. D.U. d'implantologie Paris XII 2001
2. Belloso A, Chidambaram A, et al. Coblation tonsillectomy versus dissection tonsillectomy: postoperative hemorrhage; *Laryngoscope* 2003 Nov; 113(11): 2010-3.
3. Marx R.E. & Coll. Platelet-rich plasma. Growth factor enhancement for bone grafts. 1998, 85: 638-646.
4. Thorn J.J., Sorensen H. Autologous fibrin glue with growth factors in reconstructive maxillofacial surgery; *Int J Oral Maxillofac Surg* 2004 Jan; 33(1): 95-100.
5. Windfuhr J.P., Deck J.C., Remmert S. Hemorrhage following coblation tonsillectomy; *Ann Otol Rhinol Laryngol* 2005 Oct; 114(10): 749-56.
6. Windfuhr J., Seehafer M. Classification of haemorrhage following tonsillectomy; *J Laryngol Otol* 2001 Jun; 115(6): 457-61.

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