



CLINICAL OUTCOMES OF ENDOSCOPIC MICRODEBRIDER-ASSISTED ADENOTONSILLOTOMY

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Abstract. Adenotonsillotomy (ATT) is one of the most frequently performed surgical procedures in otorhinolaryngology. The issue of selecting the optimal ATT technique and minimizing postoperative complications and recurrence remains unresolved. To determine the effectiveness and feasibility of endoscopic microdebrider-assisted adenotonsillotomy (EMAATT) in children, a study was conducted involving 80 patients aged 3 to 18 years. Endoscopic microdebrider-assisted adenotonsillotomy was performed in all 30 patients of the main group, including 12 boys and 18 girls. The results of the study demonstrated that EMAATT reduces the incidence of intraoperative and postoperative bleeding from $12.2 \pm 0.07\%$ in the control group to $1.3 \pm 0.01\%$ in the main group ($p = 0.003$) and decreases intraoperative blood loss from 166.1 ± 39.3 mL to 20.9 ± 18.9 mL ($p = 0.0001$). Furthermore, EMAATT significantly reduced the frequency of bleeding in patients with grade II–III hypertrophy of the pharyngeal and palatine tonsils associated with complex changes in the facial skeleton and surrounding soft tissues, malocclusion, and recurrence, from 13.5% in the control group to 0% in the main group. Ultimately, this technique represents a more conservative and function-preserving surgical approach, allowing endoscopic microdebrider-assisted adenotonsillotomy to be recommended as a method of choice.

Key words: endoscopic microdebrider-assisted adenotonsillotomy, adenoid vegetation, palatine tonsil hypertrophy.

Annotatsiya. Adenotonsillotomiya (ATT) – otorinolaringologiyada eng ko'p bajariladigan jarrohlik amaliyotlaridan biri hisoblanadi. ATT usulini tanlash va operatsiyadan keyingi asoratlarni kamaytirish masalasi hozirgi kunda ham dolzarb bo'lib qolmoqda. Bolalarda shayverli endoskopik adenotonsillotomiyaning (ShEATT) samaradorligi va undan foydalanish imkoniyatlarini aniqlash maqsadida 3 yoshdan 18 yoshgacha bo'lgan 80 nafar bemor ishtirokida tadqiqot o'tkazildi. Asosiy guruhdagi 30 nafar bemorga (12 nafar o'g'il bola va 18 nafar qiz bola) shayverli endoskopik adenotonsillotomiya bajarildi. Tadqiqot



natijasida ShEATT quyidagi afzalliklarga ega ekanligi aniqlandi: nazorat guruhidagi $12,2 \pm 0,07\%$ dan asosiy guruhda $1,3 \pm 0,01\%$ gacha ($p=0,003$) intraoperatsion va operatsiyadan keyingi qon ketishlar chastotasini kamaytiradi; qon yo'qotish hajmini $166,1 \pm 39,3$ ml dan $20,9 \pm 18,9$ ml gacha ($p=0,0001$) kamaytiradi. Shuningdek, II-III darajali halqum va tanglay bodomcha bezlari gipertrofiyasi, yuz skeleti va atrof yumshoq to'qimalardagi kompleks o'zgarishlar, tishlash deformatsiyasi hamda uning retsidivlari bilan kechuvchi bemorlarda qon ketish chastotasini nazorat guruhidagi $13,5\%$ dan asosiy guruhda 0% gacha ishonchli kamaytirishi aniqlandi. Bu esa jarrohlik aralashuvining yanada ehtiyotkor va funksional jihatdan maqbul usulini ta'minlaydi. Shu sababli shayverli endoskopik adenotonzillotomiyani tanlov usuli sifatida tavsiya etish mumkin.

Kalit so'zlar: shayverli endoskopik adenotonzillotomiya, adenoid vegetatsiya, tanglay bodomcha bezlari gipertrofiyasi.

Аннотация. Аденотонзиллотомия (АТТ) – является одним из самых распространенных в оториноларингологии хирургических вмешательств. Вопрос выбора методики АТТ и минимизации послеоперационных осложнений рецидива остается открытым. В целях определения эффективности и возможности использование шейверной эндоскопической аденотонзиллотомии (ШеЭАТТ) у детей проведено исследование с участием 80 пациентов в возрасте от 3-х до 18 лет. Всем детям основной группы 30 пациентов, 12 мальчиков, 18 девочек проводилось ШеЭАТТ. В результате исследования установлено, что ШеЭАТТ позволяет: снизить частоту возникновения интра - послеоперационных кровотечений с $12,2 \pm 0,07\%$ в контрольной группе до $1,3 \pm 0,01\%$ в основной группе ($p = 0,003$) и уровень кровопотери со $166,1 \pm 39,3$ мл до, $20,9 \pm 18,9$ мл основной группе ($p = 0,0001$); достоверно снизить частоту кровотечений у пациентов с гипертрофии глоточной и небных миндалин (НМ) II-III степени осложненным комплексом изменения лицевого скелета и окружающих мягких тканей с деформированным прикусом и его рецидивами с $13,5\%$ в контрольной группе до 0% в основной группе, что в конечном итоге выражалось в более консервативном варианте хирургического вмешательства, благодаря чему можно рекомендовать данный вид аденотонзиллотомии как метод выбора.

Ключевые слова: эндоскопическая шейверная аденотонзиллотомия, аденоидная вегетация, гипертрофия небных миндалин.

Introduction. The management of palatine tonsil hypertrophy (PTH) and adenoid hypertrophy (AH) grades II-III, as well as their associated complications, remains an important and socially significant issue in modern otorhinolaryngology.



Despite the wide variety of treatment options available for PTH and AH grades II-III, the optimal therapeutic strategy has not yet been fully established. On the one hand, current understanding of the immunological role of the palatine and pharyngeal tonsils emphasizes the need for a conservative and organ-preserving approach, limiting indications for adenotonsillectomy. On the other hand, existing conservative treatment methods fail to provide long-term sanitation of the lymphoid tissue and can only be considered palliative measures. Therefore, adenotonsillotomy remains the most effective surgical treatment for patients with grade II-III hypertrophy of the adenoids and palatine tonsils.

Conventional adenotonsillotomy is associated with several limitations. First, local anesthesia is often insufficient to ensure adequate patient comfort. Second, partial preservation of the palatine tonsils is difficult to achieve. Third, the procedure requires the use of sharp surgical instruments, which may increase the risk of intraoperative and postoperative complications, particularly severe hemorrhage that can recur during the postoperative period. These factors negatively affect the patient's psycho-emotional state and may adversely influence postoperative recovery. Moreover, memories of adenotonsillotomy performed under local anesthesia using traditional techniques often remain psychologically distressing for patients throughout their lives.

Over the past decades, surgical approaches to adenotonsillotomy have evolved considerably. Traditional techniques have increasingly been replaced by minimally invasive methods of partial tonsillar removal. Currently, surgical options include electrocautery (mono- and bipolar), ultrasonic scalpel surgery, radiofrequency ablation, thermal welding technology, carbon dioxide and diode laser surgery, coblation, and microdebrider-assisted techniques.

Adenotonsillotomy remains one of the most frequently performed procedures in otorhinolaryngological practice. Despite its long history and the availability of numerous surgical techniques, the selection of the optimal procedure and minimization of postoperative complications continue to be challenging issues.

Among the currently available methods, endoscopic microdebrider-assisted adenotonsillotomy appears particularly promising. The microdebrider enables precise and controlled removal of hypertrophic adenoid and tonsillar tissue with minimal trauma to surrounding structures and blood vessels, thereby reducing the risk of bleeding and recurrence. Furthermore, the procedure is performed under general anesthesia, eliminating psychological stress and negative memories associated with surgery.

Aim of the study. To evaluate the effectiveness of endoscopic microdebrider-assisted adenotonsillotomy in preventing postoperative hemorrhage and disease recurrence compared with conventional adenotonsillotomy.



Materials and Methods. Between 2022 and 2024, a total of 80 adenotonsillotomies were performed in the ENT Department of the Samarkand Regional Children's Multidisciplinary Clinical Center for the restoration of nasal and pharyngeal function in patients with grade II–III adenoid and palatine tonsil hypertrophy.

The patients were divided into two groups. Group 1 (main group) included patients who underwent endoscopic microdebrider-assisted adenotonsillotomy ($n = 30$; 12 males and 18 females; mean age 26.4 ± 7.4 years). Group 2 (control group) consisted of patients treated using the conventional surgical technique ($n = 50$; 30 males and 20 females; mean age 27.7 ± 10.1 years).

The groups were comparable in terms of age and sex distribution ($p > 0.05$). Endoscopic microdebrider-assisted adenotonsillotomy under endotracheal general anesthesia was introduced into the department's surgical practice in 2022. Postoperative management was conducted according to standard treatment protocols and included inpatient observation, a soft diet, analgesic therapy, and antibacterial treatment. Statistical analysis was performed using SPSS software.

Results and Discussion. Modern trends in otorhinolaryngology aim to make adenotonsillotomy a painless and nearly bloodless procedure while minimizing postoperative complications, particularly pharyngeal hemorrhage associated with the close anatomical relationship of tonsillar vessels.

Postoperative bleeding remains an unpredictable and potentially life-threatening complication. According to the literature, the incidence of early hemorrhage following adenoidectomy is approximately 3.4%. Reported rates of intraoperative and postoperative bleeding following conventional adenotonsillotomy are 8.91% and 0.99%, respectively. For endoscopic adenotonsillotomy, the corresponding rates are 6.0% and 1.5%, whereas microdebrider-assisted endoscopic adenotonsillotomy demonstrates markedly lower rates of intraoperative bleeding (2.86%) and no reported postoperative hemorrhage.

The annual distribution of adenotonsillotomies and hemorrhagic complications is presented in Table 1.

Table 1. Dynamics of Adenotonsillotomy Procedures and Hemorrhagic Complications

Year	Number of Procedures	Number of Bleeding Cases	Bleeding Rate (%)	Year
2022	26	3	11.5	2022
2023	28	4	14.3	2023



2024	26	2	7.7	2024
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Following the introduction of endoscopic microdebrider-assisted adenotonsillotomy in 2022, the number of procedures increased; however, the overall incidence of bleeding remained clinically significant, necessitating a detailed analysis of the relationship between surgical technique, degree of hypertrophy, and bleeding risk.

The overall incidence of hemorrhage in the main group was significantly lower (1.3%) than in the control group (12.2%; $p = 0.003$). Among patients with grade III hypertrophy of the adenoids and palatine tonsils, no cases of postoperative bleeding were observed in the microdebrider group, compared with 13.5% in the conventional surgery group ($p = 0.017$). These findings support the growing evidence that conventional adenotonsillotomy should increasingly be replaced by modern minimally invasive techniques whenever possible.

The endoscopic microdebrider-assisted approach provides excellent visualization of the surgical field, facilitates complete removal of hypertrophic adenoid tissue, minimizes recurrence, and allows timely control of intraoperative bleeding using radiofrequency coagulation when necessary.

Analysis of intraoperative blood loss demonstrated substantial advantages of the microdebrider technique. In patients with grade II hypertrophy, mean blood loss was only 20.9 ± 18.9 mL in the main group compared with 166.1 ± 39.3 mL in the control group ($p = 0.0001$). In patients with grade II–III hypertrophy, blood loss during conventional surgery reached 197.3 ± 39.7 mL.

These results emphasize the importance of selecting an optimal surgical technique for patients with adenoid and palatine tonsil hypertrophy, particularly in recurrent cases.

Conclusion. Endoscopic microdebrider-assisted adenotonsillotomy significantly reduced the incidence of intraoperative and postoperative hemorrhage from $12.2 \pm 0.07\%$ in the control group to $1.3 \pm 0.01\%$ in the main group ($p = 0.003$). Intraoperative blood loss decreased from 166.1 ± 39.3 mL to 20.9 ± 18.9 mL ($p = 0.0001$). The use of endoscopic microdebrider-assisted adenotonsillotomy reduced the incidence of bleeding in patients with hypertrophy of the palatine tonsils and adenoids from 13.5% in the control group to 0% in the main group, supporting its recommendation as the preferred surgical technique for this patient population.

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