

Chemical Ablation of the Septoturbinar Synechia

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Septoturbinar synechia is a pathological adherence between the mucosa of the turbinate and the nasal septum. Synechiae result after endoscopic sinus surgery or can be caused by trauma, infections, autoimmune pathologies, drug abuse, chemical burns, radiotherapy or intensive nose packing. The treatment for septoturbinar synechiae is surgery with the ablation of adhesences. In this paper we will present a new surgical method for the ablation of synechiae under endoscopic control, using coblation.

Keywords: septoturbinar synechia, endoscopic surgery, coblation

Septoturbinar synechia is the pathological fibrous tissue sticking between the mucosa of the turbinate and the mucosa of the nasal septum [1].

Synechiae are one of the most common complications that occur after endoscopic sinus surgery, with an incidence of 10% to 40% [2,3].

Septoturbinar synechia is diagnosed when there is adhesion between one turbinate and the nasal septum. The diagnosis is based on the clinical examination of the patient. Anterior synechiae can be visualized when performing anterior rhinoscopy; the posterior ones are better seen when performing an endoscopic examination of the nasal fossa [4].

Besides endoscopic surgery, other causes of synechiae occurrence are infections (Rhinoscleroma, Rhinosporidiosis, M. tuberculosis, M. leprae, Syphilis, Histoplasmosis), autoimmune pathologies (Sarcoidosis, Epidermolysis bullosa acquisita), trauma, intensive and prolonged nose packing, cocaine abuse, chemical burns, radiotherapy or T cell lymphoma- nasal type, diabetes[5]. These conditions lead to ulceration and granulation of the mucosa and eventually to the formation of synechiae [6,7].

Usually, synechia formation is limited to a few lesions, but there are cases when the scar tissue occupies almost the entire nasal cavity. The symptoms of this pathology vary according to the extension of the lesion. The most common manifestations are nasal obstruction and inefficient mucous drainage that can cause rhinosinusual symptoms [8].

The treatment for synechia is surgery. The surgical technique and tools are chosen after a thorough examination of the nasal cavity.

In time, many techniques for the resection of the synechiae developed. The goal is the complete resection of the fibrous tissue and preventing the formation of new adhesions [9].

For the small anterior synechiae, the resection can be performed with cold instruments (scissors, surgical blade) under local anesthesia. For the posterior and larger adhesences, endoscopic surgery is required to have good visibility of the lesion. Usually, the resection is performed with cold instruments or with the microdebrider. The rotating tip of the microdebrider shaves and removes the fibrous tissue [10,11].

After the surgical procedure, the insertion of silicone stents or splints in the nasal cavity is necessary to prevent the formation of new tissue adhesences. The stents must be kept in the nasal fossa until the appropriate regeneration of the tissue is done. This may last from a couple of days until a few weeks. While the stent or splinter is in place patients should be advised against blowing their nose, to prevent avulsion of the materials. The ointment is also necessary during this time to keep the nasal mucosa moist and to prevent infection. In case of pain or tissue inflammation administration of anti-inflammatory pills are necessary [12-15].

The most common risks of this procedure are infection and bleeding.

Nowadays with the development of technology, new medical devices were created for the removal of soft tissue. Coblation is a new minimally invasive technology used for dissection and ablation of tissue and coagulation [14,16,17].

In this paper, we will present coblation as a new surgical method for the resection of synechiae under endoscopic control.

Experimental part

Although the removal of septo-turbinar synechiae is considered a common procedure, complications like infection, bleeding or recurrence may appear during or after the surgery.

Nowadays new techniques developed to aid the surgeon to reduce intraoperative and postoperative risks.

Coblation is a minimally invasive technology used for the dissection and ablation of soft tissue. Another advantage of this procedure is that, by using radiofrequency combined with saline solution, coagulation can be performed. However, this technology is non-heat so that the adjacent structures suffer no additional lesions.

Coblation uses *glow discharge plasma* that has a chemical effect on the tissue, not a thermal one. The saline solution is a conductive medium. When radiofrequency energy passes through the saline solution, it breaks the solution into ions. This way the plasma field is formed. The plasma field dissociates the molecular bond of the soft tissue, causing dissolution.

The results of using non-heat technology are no damage to the surrounding tissue, faster recovery and less pain for the patient.

Plasma technology uses lower temperatures than other radiofrequency-based technologies.

The radiofrequency generator, the foot pedal, the irrigation system and the wand are the components of the coblation system.

For synechiae resection, we use a special coblation wand called Procise XP. This wand was originally designed for tonsillectomy and adenoidectomy procedures, but the lower-profile shaft makes it suitable for tight anatomic spaces like the nasal cavity. The wand can be used for ablation of tissue, coagulation and for suction. This instrument aids the surgeon by increasing the visualization of the surgical field and decreases surgical time. The malleable wand shaft makes it easy to use in different anatomic areas.

The integrated saline irrigation and suction features allow the delivery of the optimum quantity of solution regardless of the wand's orientation.

In our clinic we perform chemical ablation of the synechia, using coblation technology, under endoscopic control. For this procedure, we use a 0 rigid endoscopic tube.

The surgical procedure is performed under general anesthesia. Once the synechia is visualized the surgeon begins the ablation of the adherence with the help of the coblation wand. The Procise XP wand is well suited for narrow spaces and with the help of the special irrigation system it can be oriented in any way needed for it not to obstruct the visualization of the surgical field (fig. 1)

Tissue resection is performed with minimum bleeding. (fig. 2)



Fig. 1. Intraoperative image of septoturbinal synechia.



Fig. 2. Chemical ablation of septoturbinal synechia.

To prevent recurrence, a wider resection of the inferior turbinate mucosa was performed.

At the end of the procedure, the space created between the mucosa of the inferior turbinate and the mucosa of the nasal septum can be observed (fig. 3)



Fig. 3. Intraoperative image after complete resection of septoturbinal adherence.

Results and discussions

The treatment for septoturbinal synechia is surgery. With the development of technology, new techniques became

available to increase surgical performance, reduce intraoperative and postoperative risks and to prevent recurrence.

By using coblation under endoscopic control, the management of synechia evolved, and complications were reduced. The procedure is simple and efficacy significant. Coblation is minimally invasive, and the non-heat function prevents thermal lesions from the nasal cavity mucosa.

Bleeding during the procedure is minimum. In case of intraoperative heavy bleeding, the coagulation feature of the wand provides fast and efficient hemostasis. [18]

After the resection of the adhesion, to increase nasal airway patency turbinoplasty can be performed.

After using the coblation technology, nasal packing is not mandatory. This prevents more damage of the mucosa and the risk of more pathological fibrous tissue formation.

Conclusions

We consider chemical ablation of the septoturbinal synechia to be an advantageous surgical method because it is minimally invasive, and it reduces surgical time with the help of the Procise XP wand that has suction, ablation and coagulation features integrated all in one.

The recovery of the patient is faster with less pain due to its low thermal technology that causes minimal damage to the surrounding tissue.

The suction and coagulation features help maintain the visibility of the surgical field throughout the intervention, allowing the surgeon to completely remove the fibrous tissue and reduce blood loss.

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