Original Research Article

Nasal endoscopic surgery: not only FESS: Twenty years of experience

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Abstract The authors present their twenty-year history of nasal endoscopic surgery highlighting that nasal endoscopic surgery is not only represented by FESS but also by endoscopic surgery of the nasal septum, turbinates, nasopharynx, epistaxis and more. Endoscopic nasal surgery is well tolerated by patients, resolving for pathologies and free from major complications. It represents an irreplaceable instrument in the hands of the modern otorhinolaryngologist.
Key Word: nose, paranasal sinus, endoscopy, surgery, FESS

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INTRODUCTION

Endoscopic nose surgery is a fundamental surgical activity for every otorhinolaryngology department. The enormous diffusion of F.E.S.S. in recent decades has allowed a more rational and conservative approach to the phlogistic and neoplastic pathologies of the paranasal sinuses. However, endoscopic nose and paranasal sinus surgery is not just F.E.S.S.: procedures such as endoscopic septoplasty, endoscopic turbinoplasty, epistaxis surgery and much more are nowadays performed daily in otorhinolaryngology departments all over the world. In this scientific work the Authors present their twenty-year history of endoscopic nose and paranasal sinus surgery by discussing the indications, contraindications, technical notes, results and possible complications of any type of intervention.

PATIENTS AND METHODS

From 1 August 1999 to 31 July 2019 the Authors carried out 2457 endoscopic nasal surgery procedures at the following clinics: Villa Michelino in Lamezia Terme (Italy) from august 1999 to january 2008, San Camillo in Messina (Italy), from March 2001 to September 2016, C.O.T. in Messina (Italy), from October 2016 to today, MarrelliHealt in Crotone (Italy) from October 2016 to today.

After institutional review board's approval, surgical procedures were performed with prior patient's informed written consent. All personal information where anonymized prior to publication. The preoperative, operative and post-operative procedures followed were in accordance with the Helsinki Declaration of 1975, as revised in 2008.

These procedures included:

- 101 endoscopic septoplasties
- 465 endoscopic septoplasties associated with FESS
- 600 FESS
- 200 endoscopic surgical procedures for epistaxis
- 296 nasopharyngeal endoscopic surgery procedure
- 587 endoscopic turbinoplasty using radio frequency or diode LASER
- 188 minor endoscopic interventions for FESS or septoturbinoplasty review

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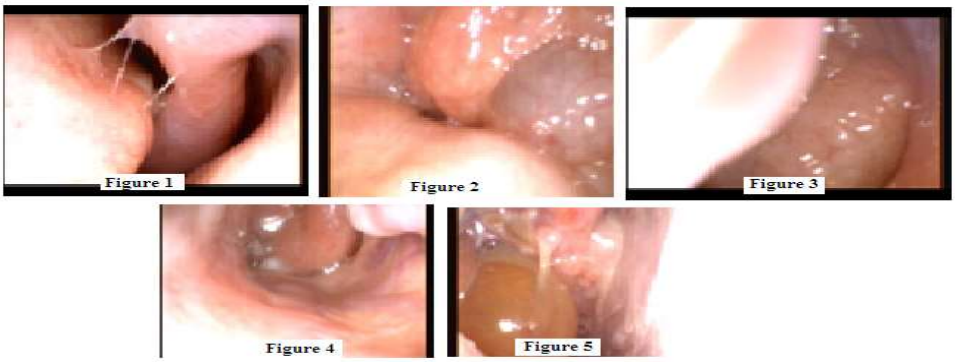
- 20 maxillo-facial surgical procedures endoscopy-assisted

Totally the endoscopic septoplasties were 566 and the FESS 1065. In the same period, we performed 1100 non endoscopic septoplasties, 857 non endoscopic turbinoplasties and 1254 non endoscopic adenoidectomies. Endoscopic septoplasty[1,2,3] is possible and usefullin any cases of posterior isolate deformities of nasal septum and osteocatilagineous septal spurs. In endoscopic septoplasty and in septoplasty combined with FESS the entire procedure was performed under endoscopic control.[4,5,6,7,8,9,10,11]. The phases of endoscopic septoplasty are the following[1] packing of nasal cavities with cotton soaked with a mixture of xilocaine 10% and epinephrine for two minutes; endoscopic evaluation of nasal cavities; small vertical incision located at the front of septal spur; subperiosteal dissection of bone spurr until a subperiosteal flap is created online in the side of spur; removal of bone spur using a small chisel or Citelli nasal forceps; reposition of mucoperiosteal flap; normally nasal packing is unnecessary. If packing is necessary we generally use Spongostanreabsorbeable tampons[3]. Functional endoscopic sinus surgery (FESS) is the surgical gold standard for the treatment of chronic sinusitis, nasal polyposis and many benign neoplasms of the nose and paranasal sinuses. The classical phases of uncinectomy, bullectomy, anterior and posterior ethmoidectomy, access to the maxillary and sphenoid sinuses are widely described in international literature.[12, 13, 14, 15]. Endoscopic turbinoplasty with LASER diodes or radiofrequencies is a simple procedure that can be performed in an outpatient or day-surgery setting, normally under topical anesthesia. The procedure can also be performed without endoscopic control, with less visualization of the posterior region (tail) of the inferior turbinate.[16,20] The surgical treatment of the anterior epistaxis can be carried out without the endoscope, but in cases where the bleeding site is not immediately identifiable the endoscopic inspection of the nasal cavities is fundamental for a correct diagnosis of the bleeding site and for a targeted treatment , especially in cases of posterior epistaxis[18] Pathologies of the nasopharynx benefit greatly from endoscopy which allows good visualization of this anatomical area to diagnose and perform biopsies of rhinopharyngeal neoformations, endoscopic adenoidectomies with LASER diodes or with micro-debriders, removal of Tornwaldt's cysts and much more.[19]. An emerging use of endoscopy concerns some open-air operations on the paranasal sinuses, especially on the maxillary sinus, during which the use of the endoscope through the canine pit allows a better visualization of some areas of difficult inspection and a more complete eradication of the pathology.

OBSERVATION AND RESULTS

566 endosopic septoplasties were performed from 1 August 1999 to 31 July 2019. The surgical procedures were performed in one day surgery and the next day the patient was discharged from hospital. None postopertive bleeding case and none postoperative septal haematoma occurred. Postoperative septal perforation occurred in 3 (0,53%) of 566 endoscopic sesptoplasty Postoperative turbino-septal sinechia occurred in 6 (1,06 %) of 566 endoscopic septoplasty. None postoperative septal deflection requiring a new surgery occurred. 1065 FESS were carried out in the period covered by this study. Chronic sinusitis, nasal polyposis, concha bullosa, inverted papilloma of the nose and paranasal sinuses (32 cases) and malignant tumors (10 cases of carcinoma) were treated. No major complication arose in the cases studied. Only 1 case of postoperative bleeding occurred during the removal of swabs which necessitated endoscopic caulking in narcosis of a branch of the sphenopalatine artery and 1 case of minor orbital complication (orbital hematoma). The recurrence rates of nasal polyposis, chronic sinusitis and inverted papilloma were consistent with data emerging from international literature. The malignant neoplasms object of the present study were all subjected subsequently to surgery to treatments of radiotherapy and chemotherapy. None of these patients died due to the disease in question in the 20 years covered by this study. 567 endoscopic turbinoplasties were performed during the period covered by the following study; of these 250 using radiofrequency equipment and 317 using diode LASER. No postoperative bleeding such as to require nasal packing occurred; no turbino-septal synechia; the recurrence rates of turbinate hypertrophy, especially in allergic subjects, were consistent with those found in international literature. The 200 endoscopic procedures for the treatment of epistaxis concerned mainly recurrent posterior epistaxis, causticatios of anterior or posterior ethmoid branches or branches of the sphenopalatine artery. No case of short-term recurrence of the disease occurred; however, in 35 cases of hereditary haemorrhagictelangectasia (Rendu-Osler's disease) recurrent medium or long-term epistaxis occurred as was to be expected in this pathology. 296 nasopharyngeal endoscopic procedures were performed in the study period. Among these 40 endoscopic adenoidectomies in patients over 14 years performed under local anesthesia with LASER diodes or with micro-debriders; 36 Tornwaldt's cysts, which were viewed endoscopically and marsupialized; 220 endoscopic biopsies of nasopharyngeal neoformations. In this heterogeneous group of procedures, no haemorrhagic or infectious complications occurred. The 188 cases of endoscopic

revision surgery involved turbino-septal synechiae arising after traditional septopurboplasty and small recurrences of nasal polyps after FESS. The procedures were all carried out under local anesthesia and allowed with a minimum discomfort of the patient to remedy these small problems.



DISCUSSION

We are not exclusive endoscopic surgeons; as already mentioned, in the period covered by this study, we performed 1100 non endoscopic septoplasties, 857 non endoscopic turbinoplasties and 1254 non endoscopic adenoidectomies. Non-endoscopic septoplasty according to Cottle remains the cornerstone of surgical treatment of nasal septum deformities especially those located in the anterior cartilaginous segment that can hardly be treated endoscopically. However, in selected cases, the endoscopic technique allows, especially in the case of posterior bone spurs, to have a more conservative and complication-free approach. The traditional adenoidectomy practiced by the oropharynx with the Beckman-like adenotome remains the fundamental surgical technique for pediatric adenoidectomy; the endoscopic method is useful in some revision cases and in adenoidectomies in adult or collaborative subjects that can be performed endoscopically in local anesthesia. For targeted nasopharyngeal biopsies and for Tornwaldt's cysts, the endoscopic method is essential to perform targeted, precise and delicate surgical procedures otherwise impossible. Today we perform turbinoplasty almost always under local anesthesia using the diode LASER. In many cases the procedure is carried out without the aid of the endoscope; in this way the procedure is simpler and faster and more pleasing to the patient who does not have to withstand the introduction of the endoscope and LASER fiber into the nasal fossa simultaneously, but this entails the risk of not correctly visualizing the posterior region of the turbinate and therefore not to correct correctly the hypertrophies of the tail of the turbinates, as instead is brilliantly done in endoscopy. FESS consists of a surgical intervention aimed at the treatment of some nose-sinus disorders: mainly chronic sinusitis and polyposis. The aim of the FESS intervention is normally to free the drainage pathways of the paranasal sinuses, expanding the hosts and restoring the physiological aeration. In the last twenty years, nasal endoscopy, thanks to increasingly sophisticated optical equipment, available in different varieties of diameters (2.7 mm and 4 mm) and angulations (0 ° -30 ° -45 ° and 70 °), in able to guarantee excellent visualization and illumination of the operative field, it has become the gold standard in the diagnostic and therapeutic pathway of paranasal sinuses. The use of FESS introduced into the world by Stammberger, who codified the technique of his master Messerklinger, allowed a targeted treatment of phlogistic pathologies of the paranasal sinuses, reducing the discomfort for the patient and the times of hospitalization and improving the functional result. In some cases the pathologies of the paranasal sinuses, especially of the maxillary sinus, are of odontogenic origin and require an external approach carried out with a modified Caldwell-Luc approach or, if indicated and possible such in the edentolous patients, with the (Micali's approach) by the crestal plane with a minimum impact to the buccal tissue; classically, through the external opening of the canine fossa it is possible to introduce the endoscope thus allowing an optical view of the entire maxillary sinus and a more complete and conservative treatment of the pathologies. Normally we perform these procedures in collaboration between the maxillofacial surgeon and the otolaryngologist.

CONCLUSIONS

Endoscopic surgery is now an indispensable cornerstone of ENT surgery. Young surgeons have the advantage of receiving professional training with a purely endoscopic mentality; but we would like to underline the fact that the knowledge of non-endoscopic surgical approaches, the prerogative of older surgeons, can be fundamental for the resolution of some pathologies. For this reason we believe that collaboration and generational integration are very important.

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