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Short Communication

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Conchopexy Versus Bolgerization in Preventingmiddle Turbinate Lateralization After Functional Endoscopic Sinus Surgery

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Abstract

Background:

Middle turbinate lateralization was one of usual complications following functional endoscopic sinus surgery (FESS), result in failure of initial procedure, and obstruction of osteomeatal complex, with its impact on life quality.

Objectives:

To evaluate and compare the outcome of middle turbinate conchopexy suture, with that of Bolgerization method, in avoiding middle turbinate lateralization after FESS.

Methods:

Randomized study, of 80 patients underwent functional endoscopic sinus surgery were divided into 2 groups: group A; 40 patients with Conchopexy and group B; 40 patients with Bolgerization technique, the nal postoperative assessment at 1st month after surgery, where the placement of middle turbinate, and sinus cavity condition, using post-operative sinus endoscopic score (POSE), and by SNOT- 22 value. Statical analysis were used for comparison of postoperative symptoms between 2 groups.

Result:

Statically signi cant improvement was detected in group B by POSE score (9.37%), and SNOT-22 (3.63±1.78), compared to those in group A where it was (18.96%), and (24.27±1.36) respectively, with P value = 0.001, also, for post-operative patient`s symptomology, as in group B; a statically signi cant improvement were found, as, for nasal obstruction, rhinorrhea, olfactory function, and facial pain, with P values < 0.005, in case of synechia has been shown to be effective in prevention of lateralization of middle turbinate in group B (92.5%), while in group A, it was (77.5%), with P values = 0.0021.

Conclusion:

Bolgerization techniques was more effective than conchopexy in avoiding middle turbinate lateralization after FESS

1. Introduction

1.1. Background

The middle turbinate is considered as an important landmark is medialized to gain wide access during FESS, however, it can be lateralized in some conditions postoperatively, and it obstructs osteomeatal complex, so, this led to impairing the drainage and ventilation of sinuses, and also, preventing drug penetration to sinuses, which can consequently cause adverse effect, increased incidence of revision surgery [1]. Therefore, the surgical interventions of functional endoscopic sinus surgery (FESS) are designed for the blockage removal of interconnected passages in oste-omeatal complex that results in disease of the sinuses, also, restore normal sinus ventilation and drainage [2].

It was detected that the in fracturing the middle concha to gain the entry to the middle meatus through operation is accompanied with an elevated danger for lateralization after the surgical procedure, because either from the bulk of the turbinate or occurrence of. Adhesion, therefore in endoscopic technique, it is demand to cut in with the middle concha to preserve the patency of the middle meatus. The middle concha must be evaluated by wherewithal of endoscopy and imaging pre-operatively, so, any abnormal middle concha must be managed accordingly by lateral resection of concha bullosa, partial turbinectomy, or removal of inferior partition for oppy middle concha, moreover, and if paradoxical and even duplicated middle concha, that causes nasal obstruction, managed by resection of its middle part [3].

To bypass this, many further techniques, as Conchopexy suture, Bolgerization, nasal pack, bioresorbable implant, and bioglue had used to maintained the medialization of the middle concha, moreover, conchopexy suture and Bolgerization are exceedingly applied procedures with high success rate, and so, conchopexy suture technique utilize suturing of middle concha with nasal septum, which is favored if the middle turbinate was unstable, yet, it is technically dicult and lengthens operating time, while, in Bolgerization technique, planned synechiae was made through the septum of the nose and the middle turbinate, by making a raw area on middle turbinate antero-inferior partition and the adjacent septum, though this technique was easy to perform, its accompanied with damage to non-stable middle concha and carry the risk of perforation of the nasal septum [4, 5].

Aims of the current study was to evaluate and compare the outcome between middle turbinate conchopexy suture, with that of Bolgerization method in preventing middle turbinate lateralization following functional endoscopic sinus surgery.

2. Methods

Comparative and interventional randomized study of 80 patients, whom underwent functional endoscopic sinus surgery (FESS) with failed medical treatment, they were divided randomly into two groups: group A; consist of 40 patients, where Conchopexy " xation of middle turbinate to nasal septum by suturing using absorbable Vicryl suture", and group B; consist of 40 patients, where Bolgerization technique "creation of controlled synechiae" between middle turbinate and nasal septum were done. All studied patients were evaluated probably preoperatively by means of precise history taking, and nasal endoscopic evaluation, as well as, coronal, axial, and sagittal Sino-nasal computed tomography scan.

2.1. Inclusion Criteria

Adults' patients aged > 18 years, whom presented with clinical and radiological evidence of chronic rhinosinusitis (CRS), eligible for functional sinus surgery.

2.2. Exclusion Criteria

Patient's age < 18 years, revision FESS, or any other endoscopic nasal operative intervention, chronic granulomatous disease, and benign and malignant nasal tumors.

2.3. Surgical Procedures

The medialization technique was randomly set with either Conchopexy suture or Bolgerization. Following FESS, the speci c procedure was done to medialize the middle turbinate on both sides, the patients were blinded with regards to the medialization procedures, as well as, all the surgical techniques were performed by same surgical team under general anesthesia.

The Conchopexy suture technique was performed via Vicryl 3/0, which introduced via the middle turbinate`s antero-medial partition, and the adjacent septum on one side, and furthermore traverse through the antero-inferior part of middle turbinate on the other side, then crossing via the septum just anterior to the middle turbinate.

Bolgerization technique was performed via application of a sickle knife, to make a 5x5 mm raw area on the middle turbinate`s medial aspect of antero-inferior partition, and adjacent septum. Both sides middle meatus was packed with 3 small pieces of nasal packs, and the nasal cavity was packed with 1 large nasal pack, regardless the medialization procedure.

Postoperative treatment and follow up: Patients were discharged on 2nd postoperative after nasal packs were removed within 2 days postoperatively, also, antibiotic, antihistamines, and nasal drops were given to all patients for a period of 1 week, then all patients were followed-up post-operatively, on 2nd week and after 1 month, for nal assessment, the placement of the middle concha and sinus cavity condition by using post-operative sinus endoscopic score (POSE), and by SNOT- 22 value, as well as, patient`s symptomology, to compare the improvement between the 2 studied groups.

2.4. Outcome's Assessment:

On the following next postoperative 2 weeks, crusts and secretions were cleared off the nasal cavity, while nal assessment on 12th post-operatively, were the position of middle turbinate, as well as, the status of sinus.

The assessor was blinded about the type of medialization middle concha procedure while noting the ndings. The middle turbinate was considered lateralized, if any portion of middle concha in contact with lateral nasal wall or normal, if either medialized or remained in normal anatomical position. In POSE score; normal sinuses were considered healthy, however, presence of oedema, secretions, crusting and polypoidal changes were considered unhealthy.

2.5.SNOT-22 Score:

For evaluating the functional endoscopic sinus surgery outcomes on the chronic otitis media, for quantifying differences in patient ssymp → ms and anticipat ∈ gtheextentofpost − operativeimprovement, as, its mainly applied and highest quality sinus-speci c quality of life (QOL) available, it containing 22 questions each record 0–5 (total score range 0–110), poorer quality QOL be regarded with higher scores.

3. Statistical Analysis

The analysis and storage of the collected clinical, and demographic information was performed in an Excel database, using SPSS-29 (IBM Statistical Packages, Chicago, IL, USA). Data were reported in measures of, percentage, standard deviation, mean levels, frequency, and values (minimum-maximum), a version of the chi 2 test was used for comparison of outcomes between the two groups, and $p < 0.05$ was considered as statistically significant.

4. Result

A total of 80 patients were enrolled in this study, whom underwent FESS, were assessed and analyzed. Both the Conchopexy suture (group A), and Bolgerization (group B), had 40 patients each, the age of the patients ranged from 18–70 years, with a mean age of 37.59 ± 1.86 years, there were 62 patients (77.5%) were fell in the 30–40 years age group. There were 57 males (71.25%) and 23 females (28.75%), with male: female ratio of 1.4:1

A statically signi cant improvement was detected in group B, by POSE score (9.37%), and SNOT-22 (3.63 ± 1.78), compared to those in group A, where it was (18.96%), and (24.27 ± 1.36) respectively, with P value = 0.001. Post-operative patient`s symptomology; as, for nasal obstruction, nasal discharge, olfactory function, and for facial pain, with P values < 0.005, in case of synechia has been shown to be effective in prevention of lateralization of middle turbinate in group B (92.5%), while in group A, it was (77.5%), with P values = 0.0021.

5. Discussion

Lateralization of middle turbinate is usual complication following FESS, with various possible reasons for it, as removal of the uncinate process creates a raw area in lateral nasal wall, due to repeated instrumentation during disease removal, the lateral aspect of middle turbinate gets denuded, so, it`s mobilization makes it unstable, and healing by synechiae formation to lateral nasal wall results in middle turbinate lateralization, which cause obstruction to the drainage pathway of sinuses leading to recurrent sinus disease. It is often associated with poor surgical outcome [6].

Though there are various methods mentioned in the studies, Conchopexy suture and Bolgerization method are commonly used for middle turbinate medialization. Regarding the genetic distribution, in the current study were almost similar to the ndings were revealed in other studies[7-10]. In the current study, a statically signi cant improvement was detected in Bolgerization group by POSE, and SNOT-22 scores, these detections were same to many other studies [11, 12]. While, a study done by Mahaseth RK, et al found that, although, the lateralized middle turbinate was seen more in Bolgerization group, and the mean POSE score in Conchopexy suture group was lower than in Bolgerization group, but in both conditions, the differences were not statistically significant [7].

Khaled MB concluded from his study that, among all described techniques, the most suitable procedures for the management of the middle turbinate during middle meatal endoscopic sinus surgery are the conchopexy, and Bolgerization, through which, it can led to enhance the adhesion between the middle turbinate and the corresponding nasal septum, however, he also, concluded that, the usage of middle meatal nasal pack accompany the medialization of the middle turbinate was not preferred because of 2 main reasons, which were; The high incidence of subsequent re-obliteration of the middle meatus, and the problems that were usually associated with nasal packing, as severe pain, intense headache, marked nasal obstruction with breathing difficulties, persistent rhinorrhea, recurrent bleeding [4].

Again, Mayte PU study reported that, the Bolgerization technique can make main damage of the middle turbinate and perforation a septum, wherefore it is proposed to perform a conchopexy suture to avoiding these complications [13]. Patient`s symptomology ndings in the current study were almost in similar frequencies with minimum variations, as studies [4, 10].

Dutton and Hinton [14] detected that, lateralization of middle turbinate can be avoided in 88% of cases by Bolgerization, while, in 90% by Conchopexy. Also, Anchan SV, et al reported in their study that, 70% of their patients in Conchopexy [15]. Group, and 80% of patients in Bolgerization group, had full amelioration in patient`s symptoms with no repetition of sinus problems.

Adequate medialization of the middle turbinate: Offers good view to the ostiomeatal complex during postoperative period, it is easier to remove crusts, steroids drops or sprays can adequately reach the opened ethmoids cells, and aeration of the opened ethmoids is better as the middle turbinate doesn't get lateralized and block the osteomeatal complex, as well as, adequate aeration is vital to the healing of the diseased nasal mucosa [16].

5.1. Limitations

It includes; a relatively small sample size, and single- study center, as well as, short term follow-up period.

6. Conclusions

Bolgerization techniques was more effective than conchopexy in avoiding middle turbinate lateralization, and patient`s symptomology, and nasal endoscopic ndings, so, that, it had important clinical implications for otolaryngologists, whom performing functional endoscopic sinus surgery.

Declarations

Ethical Approval and Consent to Participate

Mustanisiyah institutional Board Review approval was obtained for this study.
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Author Contributions

MRD wrote the main manuscript text

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