

Place of Middle Meatotomy in the Management of Rhinologic Chronic Sinusitis

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ABSTRACT

Introduction: Middle meatotomy is an effective surgical technique in the management of chronic sinusitis rebels to medical treatment. It is an optimal therapeutic option in the face of a chronic sinusitis particularly of rhinological origin.

Patients and method: It is a descriptive retrospective study over an 11-year period from January 2009 to December 2019 at the service of Otolaryngology and Cervico-facial surgery (ORL-CCF) at the Andohatpenaka University Hospital Antananarivo Madagascar. Our study includes subjects who have benefited from an average meatotomy on chronic sinusitis.

Results: We collected 320 patients of average age of 33.78 years. Repetitive maxillary sinusitis and rhinogenic allergies are the determinants of chronic sinusitis. Nasal obstruction was the constant functional sign and anterior rhinoscopy revealed a red nasal mucosa with enlarged inferior turbinate. All of our patients received an incidence X-ray of Blondeau. The average meatotomy was achieved in all our patients and among them, a proportion of 12.50% of the cases operated at the same time of a medium meatotomy and opening of other meatus. Complementary turbinal surgery was used in 25% of cases.

Therapeutic efficacy was assessed subjectively by the subject's functional signs. Favourable trends were reported in 75.30% of cases.

Conclusion: Chronic sinusitis is a naso-sinus condition requiring medical-surgical management. The middle meatotomy is the first step in the surgical management of chronic rhinological sinusitis rebellious to medical means.

Keywords: Chronic, meatotomy, sinusitis.

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I. INTRODUCTION

Chronic sinusitis is characterized by continuous dysfunction of the sinus mucosa, which has been evolving for more than three months [1]. Its prevalence is 14% in the USA and around 11% in Europe [2]-[4]. The middle meatotomy is a technique of opening of the maxillary sinus by internal nasal way, with the aim of restoring mucociliary drainage and aeration of the sinus. It is an optimal treatment option for chronic sinusitis that is rebellious to medical treatment [5].

II. PATIENTS AND METHOD

It was a retrospective descriptive study spread over an 11-year period from January 2009 to December 2019, carried out in the department Otolaryngology and Cervico-facial surgery of the CHU Andohatpenaka Antananarivo Madagascar. The complete records include subjects who received an endoscopic middle meatotomy due to chronic

sinusitis, over 10 years of age. Not listed in our research, all the patient who benefited from an average meatotomy for odontogenic sinusitis and other motive (tumor, malformation, etc.). Have been studied; epidemiological profile, functional signs of chronic sinusitis, history, paraclinical results and surgical aspects.

III. RESULTS

During our study, we identified 320 cases of chronic sinusitis treated with average meatotomy. The average age of our patients was 33.78 years with extremes of 10 to 70 years. The 20-29 age group was the most affected with a proportion of 28.12% (Table I). We found a slight predominance of the female gender (56.25%) with a sex-ratio of 0.77.

In the history, repetitive maxillary sinusitis and nasal allergy are the determinants of chronic sinusitis, reported in 37.5% and 25% of cases, respectively (Table II). We reported some cases of recurrence of chronic sinusitis in subjects who had benefited from an anterior mean

meatotomy or sinus drainage puncture (6.25%). But almost all of our patients with no history of previous rhinological surgery (93.75%).

The average duration of evolution of the sinus symptomatology before the surgical procedure was 5 years; the most represented chronicity is between 3 months and 24 months (65.62%). Nasal obstruction was the very accurate functional sign during chronic sinusitis (96.87%) followed by rhinorrhea reported in 75% of cases (Fig. 1). Anterior rhinoscopy was practiced in all our patients, it appreciates the inflammatory nasal mucosa in 75% of cases and inferior turbinate are enlarged in 40.62% of cases (Table III).

The paraclinical assessments include a standard x-ray in projection of Blondeau that was requested in all our patients and the sinus scan in 18.75% of cases. In most cases, surgery is indicated after failure of medical means. The surgical indication is based on clinical report and the results of the paraclinical scans. All of our enrolled patients benefited from an average meatotomy alone and among them, a proportion of 12.50% of the cases operated at the same time of a medium meatotomy and opening of other meatus. Complementary turbinal surgery was used in 25% of cases and association with septoplasty in 3.12% of cases.

Following short-term surgery, a total of 10 patients (3.12%) had a bleeding complication. A single surgical suite was marked in 310 patients corresponding to 96.87% of cases. In post-operative care, all our patients received nasal, antibiotic, and analgesic lavage. Therapeutic efficacy was assessed subjectively by the subject's functional signs. Subjective improvement was reported in more than half of the cases (Table IV).

TABLE I: DISTRIBUTION OF PATIENTS BY AGE

Age	Number (n)	Percentage (%)
10-19	60	18,75
20-29	90	28,12
30-39	80	25
40-49	50	15,62
60-70	40	12,50

TABLE II: DISTRIBUTION OF PATIENTS BY MEDICAL HISTORY

Pathological history	Number (n)	Percentage (%)
Maxillary sinusitis	120	37,5
Nasosinusian allergy	80	25
Dental infections	10	3,12
Asthma	30	9,37
Chronic rhinitis	40	12,50
Smoking	40	12,50

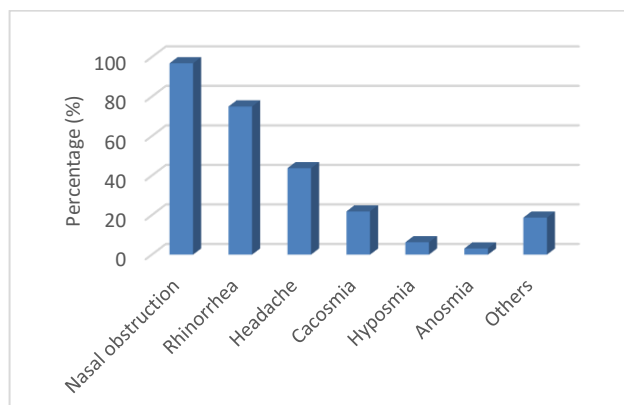


Fig. 1. Functional signs.

TABLE III: ANTERIOR RHINOSCOPY REPORT

Physical signs	Number (n)	Percentage (%)
Inflammation of the mucosa	240	75
Deviation of septum	10	3,12
Purulent secretions	10	3,12
Hypertrophy of the turbinates	130	40,62

TABLE IV: DISTRIBUTION OF PATIENTS BY SUBJECTIVE ASSESSMENT OF FUNCTIONAL SIGNS

Patient Complaint	Number (n)	Percentage (%)
Loss of functional signs	175	54,68
Improvement of functional signs	66	20,62
Recurrence of functional signs	42	13,12
Lost in sight	37	11,56

IV. DISCUSSION

In our study, the average age was 33.78 years with extremes ranging from 10 to 70 years. The most affected group was between 20 and 29 years old, or 28.12%. Two extremes are not surprising because Ouédraogo had similar age extremes to ours [6], [7]. However, Gold and al pointed out the extremes of different ages from ours ranging from 25 to 72 years [8]. This difference can be explained by the inclusion criteria of study populations that in the United States included only adults, unlike ours, which concerned all ages. This finding was supported by the epidemiological-clinical investigation of rhino sinusitis conducted by the French Agency for Health Safety of Health Products (AFSSAPS). She found a peak prevalence between 20 and 30 years [9].

A predominance of the female gender was marked in our research at 56.25% of cases. A 2013 study conducted by the Gamra and Zahir in 2018 had regained male predominance at 50.53% and 63.6% respectively [5], [10]. This predominance of the female gender could be explained by the fact that allergy, the main factor promoting sinusitis is frequently found in women. Indeed, house dust, associated with perfumes and cosmetics frequently used by women, would expose them by their constancy not only to nasal inflammation, but also to its perpetuation [6].

Some authors argued that it is female hormones, particularly estrogens, that are implicated in female predominance over allergy [11].

In our series, 120 patients had a history of repetitive maxillary sinusitis, or 37.5% of cases. In 2018, the Zahir team had found a lower rate of acute maxillary sinusitis history compared to ours, 31.6% of cases [10]. On the other hand, Ouédraogo found a very high proportion or 96.44% of history of acute maxillary sinusitis [6]. Indeed, strong damage to the maxillary sinuses could be explained by their proximity to the nasal cavities. Any discomfort in this cavity causes a lack of aeration in the maxillary sinus. Thus, a development of microorganisms is easily established at the origin of a sinusitis of acute evolution [12].

More than half of our patients had chronic sinusitis that had been developing for 3 months to 24 months (65.62%). This result was similar to that of Zahir in 2018, which recovered 72.72% of cases [10]. The evolution time of a chronic sinusitis meets the definition of a chronic pathology (evolution more than 3 months).

In our study, nasal obstruction was present in 96.87% of cases. Our results were comparable to those of Zojaji and

Njifouh who reported 96.80% and 100% of cases respectively [13], [14]. On the other hand, our results were different from those of Zahir and Ouedraogo with percentages lower respectively at 34.79% and 64% [6], [10]. This difference could be explained by the polymorphism of the disease which manifests differently from one patient to another. In addition, nasal obstruction is a frequent sign encounter as in influenza-like syndrome, therefore many patients neglect it and only come into consultation if the obstruction becomes permanent or then associated with other signs such as odor disorders [15].

We performed a previous rhinoscopy in all our patients. In our study, anterior rhinoscopy was performed in all of our patients. Zahir and Dao's team reported similar results by ignoring posterior rhinoscopy [10], [16]. Indeed, anterior rhinoscopy remains the routine examination of the nasal cavities but is alone inadequate to confirm the diagnosis of the patient. However, it is the first step in the patient's examination. It provides information on the condition of the nasal mucosa, the condition of the nasal septum, the presence of secretions and the appearance of the turbinates [17], [18].

All of our patients received a standard X-ray in projection of Blondeau. Our results were comparable to those of Ouedraogo and Njifouh reporting a standard X-ray of Blondeau in 99.18% and 100% of cases respectively [6], [13]. This type of morphological exploration was favored by its ease of access, low irradiation and affordable cost make it still retain a place in sinonasal pathology [19].

Computed tomography (CT) of the sinuses completely replaced the standard X-ray images in the radiological scan of the sinuses. In fact, it is the reference study for chronic nasosinusian disease because of its rapid acquisition of ease of patient positioning and the absence of motion-related artifacts [20], [21]. Access to this review was low in our research compared to the literature. Ivor's team in the United States had found the mandatory completion of a CT before a clinical picture of chronic sinusitis in 100% of cases [22].

The middle meatotomy is a technical of fenestration of the maxillary sinus, endonasal after failure of medical treatment.

In our series, all patients with chronic sinusitis who are resistant to medical treatment received an average meatotomy or 100% of cases. Similar results were reported by Davis et al for the surgical treatment of chronic rhinological sinusitis [23]. Similar version was found by the Davis team in Colombia [24]. Several authors agree that average meatotomy is now accepted as an effective surgical treatment of chronic rhinological sinusitis [25].

This type of surgery was considered physiological, safe and can be performed in an outpatient setting as stated by Roithmann et al [26]. In some cases, the average meatotomy was associated with other surgical gestures such as turbinectomy, lower meatotomy or septoplasty. Indeed, turbinectomy is a surgical technique indicated in patients with chronic turbinal nasal obstruction [27]. In our study, turbinectomy was performed in 25% of cases with medium meatotomy. Davis et al returned to association in 32% of cases [24].

In the same vein, the authors of the literature believe that

it is necessary to associate turbinectomy with average meatotomy in order to reduce the incidence of synechiae [24]. In our research, 12,50% of cases reported an association with meatotomy inferior. Zahir had found a different proportion of our cases at 1,1% [10]. This difference in results could justify the ease of surgical access of the inferior meatus. In some centres, inferior meatotomy was less practised because of fear of progressive closure and risk of post-operative adhesion [28].

A combination of medium meatotomy and septoplasty was also reported, with a low rate in our case. But this association was very marked according to Roithmann and Davis, they found respectively 16,12% and 26,20% of cases [24], [26].

In our study, we found an immediate complication in 3,12% of cases. It was a minor hemorrhagic complication. Our results were similar to those of the Zahir series, which found a minor complication with minimal hemorrhaging at 3,6% of cases [10]. A slightly elevated hemorrhagic complication was reported by the Stankiewicz team (7,5%). The disparity in post-operative complication numbers depended on the experience of the surgeon or the health status of each patient [29].

Evaluation of the efficacy of medium meatotomy is not easy due to the lack of a commonly used staging system. However, the majority of the authors agree on the effectiveness of this surgical technique in the management of chronic sinusitis. Disappearance of functional signs was noted in 54,68% of cases and improvement of symptoms in 20,62% of cases. No worsening of the initial symptomatology was noted. Our results were comparable to those of Gamra et al, which found a 54,77% of patients with a disappearance of functional signs, 16,54% of patients with an improvement in functional symptomatology and a recidivism rate of 28,68% [5].

A study by Kamel et al found that 95,5% of patients had experienced a subjective improvement in their initial functional symptomatology compared to ours [28]. In view of all these results, we find that the evaluation of the results of the mean meatotomy varies according to the authors. Indeed, in developed countries, the anatomical results of the middle meatotomy are also evaluated by endoscopy in post-operative looking for possible osteal closure which constitutes a long-term complication. Nevertheless, the success of surgical treatment of chronic sinusitis endoscopically is determined by the successful resolution of the patient's complaints.

V. CONCLUSION

Chronic sinusitis is a naso-sinus pathology requiring medical-surgical management. The middle meatotomy is the first step in the surgical management of chronic rhinological sinusitis rebellious to medical means. The evaluation of therapeutic efficacy was performed subjectively during outpatient monitoring for an average of 1 month. Despite the lack of appointment fees by some patients, 75,30% of patients had a satisfaction rate following the surgery.

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CONFLICTS OF INTEREST

Authors do not declare any conflict of interest.

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