



Research Paper

Preoperative and postoperative medical therapies for chronic rhinosinusitis: National surveys among Chinese otolaryngologists[☆]

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KEYWORDS

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Abstract *Objective:* The aim of this study was to evaluate clinical practice patterns of preoperative and postoperative medical therapies immediately surrounding sinus surgery for chronic rhinosinusitis (CRS) by Chinese otolaryngologists.

Methods: Two anonymous web-based surveys of preoperative and postoperative medical therapies were performed. These surveys assessed the frequency of prescription of oral corticosteroids, intranasal corticosteroid sprays, oral antibiotics, nasal saline irrigation, oral antihistamines, nasal antihistamines, anti-leukotriene agents, topical decongestants and oral mucolytics.

Results: A total of 304 (17.5%) preoperative and 143 (23.5%) postoperative questionnaires were completed and returned. Seventy-eight percent, 63% and 56% of respondents used preoperative intranasal corticosteroid sprays, oral antibiotics and oral mucolytics “always or often”, respectively. Ninety-four percent, 93%, 72% and 69% of respondents used postoperative

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intranasal corticosteroid sprays, nasal saline irrigation, oral antibiotics and oral mucolytics “always or often”, respectively. Oral antihistamines, nasal antihistamines, anti-leukotrienes and topical decongestants were not commonly used preoperatively or postoperatively.

Conclusions: Our study demonstrated that current practice patterns of preoperative medical therapies among otolaryngologists are not uniformly based on evidence-based outcomes research. Postoperative oral antibiotics, intranasal corticosteroid sprays, nasal saline irrigation and oral mucolytics are commonly used by a majority of Chinese otolaryngologist for CRS. Practice patterns of postoperative medical therapy reflect recent guidelines.

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Introduction

Chronic rhinosinusitis (CRS) is a common respiratory disease with an estimated prevalence of 8%, corresponding to 107 million people in mainland China.¹ Bhattacharyya estimated the prevalence of CRS (with or without polyps) to be $4.9\% \pm 0.2\%$ (490/10,000). The overall direct cost burden of CRS in the United States has been estimated at US\$8.6 billion per year.²

Endoscopic sinus surgery (ESS) has become the standard treatment for patients with CRS who do not respond to maximal medical therapy (MMT). Optimal perioperative therapies, including preoperative, intraoperative, and postoperative care, should be offered to patients to help assure a positive surgical outcome.³ Preoperative and postoperative pharmacologic therapies or cares may include oral and/or topical corticosteroids, antibiotics, antihistamines, mucolytics, antifungals, decongestants and saline irrigation.^{3,4}

Portela et al.⁵ reported the practice patterns of perioperative ESS care among American otolaryngologists. However, there are no uniform protocols for preoperative and postoperative medical therapies for CRS, mostly because of the paucity of available evidence.³ The purpose of our study was to determine clinical practice patterns of preoperative and postoperative medical therapies that immediately surround ESS for CRS by Chinese otolaryngology-head & neck surgeons.

Methods

This study consisted of two anonymous, web-based surveys of otolaryngologists. Two anonymous nationwide surveys were conducted through an online survey program (<https://mp.weixin.qq.com>) and were electronically distributed to all active members of the Chinese Rhinologicgroup and Rhinocare Network (www.rhinocare.net) by sending Wechat push message. Two questionnaires were 9-item single-choice questionnaire. The study was performed over a 4-week period (March 1 to March 30, 2016). A cover letter disclosed the study's goal of characterizing prescribing habits of Chinese otolaryngology-head & neck surgeons. Our study attempted to investigate the practice patterns of preoperative and postoperative medical

therapies that immediately surrounded ESS, not the maximal or standard medical therapies.

Preoperative and postoperative medical therapies were assessed in this study. For answer choices “always” was defined as 100% of the time, “often” was defined as > 70% of the time, “sometimes” was defined as 30%–70% of the time, “infrequent” was defined as <30% of the time, and “never” was defined as 0%.⁶ Percentages of each response were calculated on the basis of the number of respondents for each question.

Results

A total of 1738 questionnaires regarding preoperative medical therapy were sent out, of which 304 were returned. This survey response rate was 17.5%. A total of 608 questionnaires regarding postoperative medical therapy were sent out, of which 143 were returned. This survey response rate was 23.5% (Table 1).

Preoperative medical therapy

Topical therapies

Over one-half of respondents always prescribe preoperative intranasal corticosteroid sprays (INCS) (163, 54%) whereas 74 (24%), 27 (9%), 25 (8%) and 16 (5%) prescribe preoperative INCS often, sometimes, infrequently and never, respectively. The use of preoperative nasal saline irrigation for CRS varies: 70 (23%), 65 (21%), 57 (19%), 31 (10%) and 82 (27%) prescribe preoperative nasal saline irrigation always, often, sometimes, infrequently, and never, respectively.

Over one-third of respondents never prescribe preoperative nasal anti-histamines (118, 39%), whereas 10 (3%), 36 (12%), 89 (29%) and 52 (17%) prescribe preoperative nasal antihistamines always, often, sometimes and infrequently, respectively. Over one-third of respondents never prescribe preoperative topical decongestants (113, 37%), whereas 23

Table 1 Survey response rates.

Time	Sent	Response	Rate
Preoperative	1738	304	17.5%
Postoperative	608	143	23.5%

Table 2 Frequency of use of preoperative medical therapies in CRS (%).

Preoperative medical therapies	Always	Often	Sometimes	Infrequent	Never
Oral corticosteroid	17	28	19	18	18
Intranasal corticosteroid sprays	54	24	9	8	5
Oral antibiotics	33	30	16	8	13
Saline irrigation	23	21	19	10	27
Oral antihistamine	8	19	36	15	23
Nasal antihistamine	3	12	29	17	39
Anti-leukotriene	3	15	26	13	44
Topical decongestant	8	11	26	18	37
Oral mucolytic	28	27	17	9	20

Table 3 Median use of preoperative medical therapies in CRS.

Preoperative medical therapies	Median use
Oral corticosteroid	Infrequent
Intranasal corticosteroid sprays	Sometimes
Oral antibiotics	Sometimes
Nasal saline irrigation	Often
Oral antihistamine	Often
Nasal antihistamine	Infrequent
Anti-leukotriene	Often
Topical decongestant	Infrequent
Oral mucolytic	Sometimes

(8%), 35 (11%), 78 (26%) and 56 (18%) prescribed preoperative topical decongestants always, often, sometimes and infrequently, respectively (Tables 2 and 3).

Oral therapies

The use of preoperative oral corticosteroid in CRS varies: 52 (17%), 84 (28%), 59 (19%), 54 (18%) and 56 (18%) prescribe preoperative oral corticosteroids always, often, sometimes, infrequently, and never, respectively. One-third of respondents always prescribe preoperative oral antibiotics (100, 33%) or often prescribe preoperative oral antibiotics (92, 30%), whereas 48 (16%), 24 (8%) and 41 (13%) prescribe preoperative oral antibiotics sometimes, infrequently and never, respectively. Over one-third of respondents sometimes prescribe preoperative oral anti-histamines (108, 36%), whereas 24 (8%), 57 (19%), 45 (15%) and 71 (23%)

prescribe preoperative oral antihistamines always, often, infrequently and never, respectively. Nearly half of respondents never prescribe preoperative oral anti-leukotrienes (134, 44%), whereas 10 (3%), 45 (15%), 78 (26%) and 38 (13%) prescribe preoperative oral anti-leukotrienes always, often, sometimes and infrequently, respectively. The use of preoperative oral mucolytics varies: 84 (28%), 81 (27%), 52 (17%), 26 (9%) and 62 (20%) prescribe preoperative oral mucolytics always, often, sometimes, infrequently and never, respectively (Tables 2 and 3).

Postoperative medical therapy

Topical therapies

The majority of respondents always prescribe postoperative INCS (103, 72%), whereas 32 (22%), 5 (4%), 2 (1%) and 1 (1%) prescribe postoperative INCS often, sometimes, infrequently and never, respectively. The majority of respondents always prescribe postoperative saline irrigation (113, 79%), whereas 20 (14%), 7 (5%), 2 (1%) and 1 (1%) prescribe postoperative saline irrigation often, sometimes, infrequently and never, respectively. Over one-third of respondents never prescribe postoperative nasal antihistamines (57, 40%), and 44 (31%) sometimes prescribe postoperative nasal antihistamines, whereas 9 (6%), 18 (13%) and 15 (10%) prescribe postoperative nasal antihistamines always, often and infrequently, respectively. Over one-third of respondents never prescribe postoperative topical decongestants (47, 33%), whereas 18 (13%), 23 (16%), 32 (22%), and 23 (16%) prescribe postoperative topical decongestant always, often, sometimes and infrequently, respectively (Tables 4 and 5).

Table 4 Frequency of use of postoperative medical therapies in CRS (%).

Postoperative medical therapies	Always	Often	Sometimes	Infrequent	Never
Oral corticosteroid	17	15	27	15	26
Intranasal corticosteroid sprays	72	22	4	1	1
Oral antibiotics	50	22	13	6	9
Nasal saline irrigation	79	14	5	1	1
Oral antihistamine	12	17	38	12	22
Nasal antihistamine	6	13	31	10	40
Anti-leukotriene	4	11	28	13	44
Topical decongestant	13	16	22	16	33
Oral mucolytic	50	19	15	6	10

Table 5 Median use of postoperative medical therapies in CRS.

Postoperative medical therapies	Median use
Oral corticosteroid	Always
Intranasal corticosteroid sprays	Sometimes
Oral antibiotics	Sometimes
Nasal saline irrigation	Sometimes
Oral antihistamine	Often
Nasal antihistamine	Often
Anti-leukotriene	Infrequent
Topical decongestant	Infrequent
Oral mucolytic	Sometimes

Oral therapies

The use of postoperative oral corticosteroid in CRS varies: 24 (17%), 21 (15%), 39 (27%), 22 (15%) and 37 (26%) prescribe oral corticosteroids always, often, sometimes, infrequently, and never, respectively. One-half of respondents always prescribe postoperative oral antibiotics (71, 50%), whereas 32 (22%), 19 (13%), 8 (6%) and 13 (9%) prescribe postoperative oral antibiotics often, sometimes, infrequently and never, respectively. Over one-third of respondents sometimes prescribe postoperative oral antihistamines (54, 38%), whereas 17 (12%), 24 (17%), 17 (12%), and 31 (22%) prescribe postoperative oral antihistamine always, often, infrequently and never, respectively. Over one-third of respondents never prescribe postoperative oral anti-leukotrienes (63, 44%), whereas 6 (4%), 15 (11%), 40 (28%) and 19 (13%) prescribe postoperative oral anti-leukotrienes always, often, sometimes and infrequently, respectively. One-half of respondents always

prescribe postoperative oral mucolytics (71, 50%), whereas 27 (19%), 23 (15%), 8 (6%) and 14 (10%) prescribe postoperative oral mucolytics often, sometimes, infrequently and never, respectively (Tables 4 and 5).

For preoperative and postoperative medical therapies, over one-half of respondents always prescribe preoperative and postoperative intranasal corticosteroid sprays and nasal saline irrigation for CRS patients.

A majority of respondents prescribe preoperative and postoperative intranasal corticosteroid spray “always” (Fig. 1). Postoperative nasal saline irrigation is prescribed, while preoperative nasal saline irrigation is not. Oral antihistamines, nasal antihistamines, anti-leukotrienes and topical decongestants are not commonly used preoperatively and postoperatively (Fig. 2).

Discussion

The objective of preoperative medical therapies is not to cure CRS but rather to create the best conditions for ESS. In other words, it could be said that the substantive objective of preoperative medical therapies is to create a clean endoscopic view during ESS. Previous studies have shown that preoperative treatments with topical or oral corticosteroids can significantly improve surgical field during the ESS.⁷ A national survey of U.S. surgeons on the use of preoperative systemic corticosteroids in ESS showed that 97% and 26% of respondents prescribed preoperative oral corticosteroids in chronic rhinosinusitis with nasal polyps and chronic rhinosinusitis without nasal polyps, respectively.⁸ Of note, the authors failed to report the frequency of use of oral corticosteroids. Our survey results

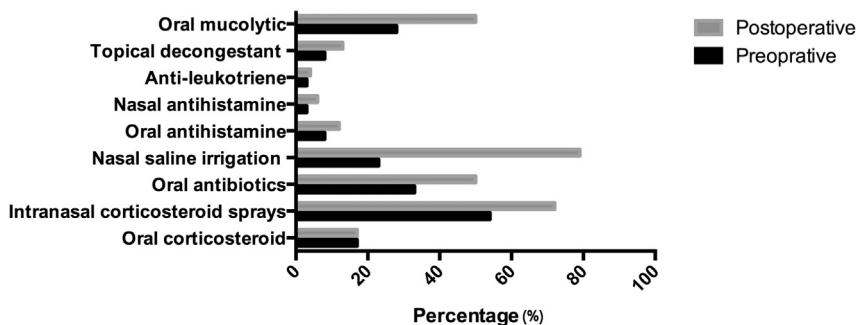


Fig. 1 The percentage change of respondents always prescribing preoperative and postoperative medical therapies for CRS.

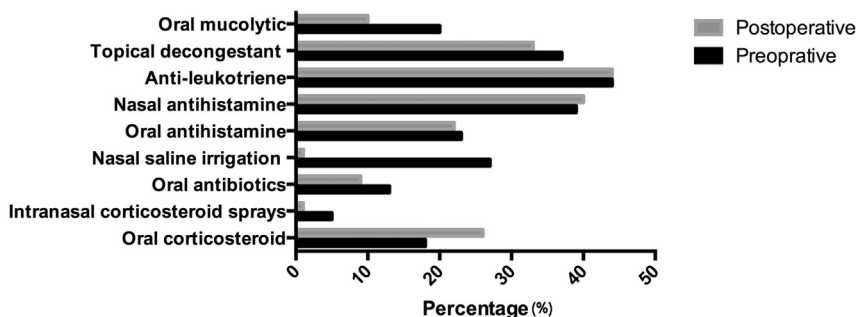


Fig. 2 The percentage change of respondents never prescribing preoperative and postoperative medical therapies for CRS.

showed that only 45% of Chinese respondents always or often prescribe preoperative oral corticosteroids for mixed CRS cases.

The 2015 International Consensus Statement on Allergy and Rhinology: Rhinosinusitis (ICAR) document states that preoperative INCS is recommended for CRS.³ Evidence has shown that INCS can improve the surgical field and decrease intraoperative bleeding and operative time.⁹ In our study, a total of 78% of Chinese respondents always or often prescribe preoperative INCS for CRS. Therefore, topical corticosteroids can be used as preoperative treatment for better surgical field.

Our survey results showed that 63% of respondents always or often prescribe preoperative oral antibiotics for CRS. Oral antibiotics are most commonly used in MMT for CRS. Interestingly, there are no known studies that have addressed the preoperative use of systemic antibiotic treatment for CRS. Because of a paucity of evidence, no recommendation regarding preoperative antibiotics can be made.

Postoperative medical therapy following ESS has been suggested to minimize avoidable complications and to optimize long-term outcomes. An evidence-based postoperative medical treatment protocol following ESS would include the use of nasal saline irrigation and INCS. The use of postoperative oral antibiotics, oral steroids are all options for postoperative care. No new studies were identified that addressed topical decongestants.³ There was insufficient evidence to support the use of topical decongestants, and ICAR made a recommendation against topical decongestants, because of potential side-effects (i.e., increased pain) and no clear benefit.³ In our study, postoperative INCS was widely prescribed, with 94% of respondents stating that it was "always" or "often" prescribed. Similarly, majority (93%) of respondents always or often prescribed postoperative nasal saline irrigation. Our survey results regarding the use of INCS and nasal saline irrigation gained supports from the ICAR. In contrast, the majority (72%) of respondents in our study always or often prescribed postoperative oral antibiotics, which is not consistent with the evidence of ICAR.

Unfortunately, Chinese guidelines for diagnosis and treatment of chronic rhinitis fail to represent the data of evidenced-based preoperative medical therapies for CRS.¹⁰ Other published guidelines exists, varying between consensus statements, in turn appearing to be reflected in clinical practice. We speculated that two abovementioned reasons are the causes of the significant deviation from international practice guidelines in the Chinese otolaryngology community.

One limitation of this study is that we did not investigate the duration and type of preoperative and postoperative medical therapies. However, we did not intend to examine the efficacy of preoperative and postoperative medical therapies. Additionally, the survey response rate of our study was low, but this is often a function of web-based

online surveys programs. These response rates may introduce significant selection bias into the survey results.

Conclusion

Our study demonstrates that current practice patterns of preoperative medical therapies among otolaryngologists are not uniformly based on evidence-based outcomes research. Postoperative oral antibiotics, intranasal corticosteroid sprays, nasal saline irrigation and oral mucolytics are commonly used by a majority of Chinese otolaryngologists for CRS, reflecting recent guidelines.

Conflicts of interest

No potential conflict of interest relevant to this article was reported.

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