

*Dr. Ahila's Conchal Crusher for Concha  
Bullosa*

**Nagalingeswaran Ahilasamy, Rajendran  
Dinesh Kumar, Sivaprakasam  
Rajasekaran & Veerasigamani  
Narendrakumar**

**Indian Journal of Otolaryngology and  
Head & Neck Surgery**

ISSN 2231-3796

Indian J Otolaryngol Head Neck Surg  
DOI 10.1007/s12070-020-01977-9



**Your article is protected by copyright and all rights are held exclusively by Association of Otolaryngologists of India. This e-offprint is for personal use only and shall not be self-archived in electronic repositories. If you wish to self-archive your article, please use the accepted manuscript version for posting on your own website. You may further deposit the accepted manuscript version in any repository, provided it is only made publicly available 12 months after official publication or later and provided acknowledgement is given to the original source of publication and a link is inserted to the published article on Springer's website. The link must be accompanied by the following text: "The final publication is available at [link.springer.com](http://link.springer.com)".**



## Dr. Ahila's Conchal Crusher for Concha Bullosa

Nagalingeswaran Ahilasamy<sup>1</sup> · Rajendran Dinesh Kumar<sup>2</sup> ·  
Sivaprakasam Rajasekaran<sup>1</sup> · Veerasigamani Narendrakumar<sup>3</sup>

Received: 24 May 2020 / Accepted: 16 July 2020  
© Association of Otolaryngologists of India 2020

**Abstract** Endoscopic Sinus Surgery is evolving day by day, there is a constant need for improvisation in terms of instrumentation with clear bloodless surgical field and good postoperative results. The applications of Dr. Ahila's Conchal Crusher for managing Concha bullosa in Functional Endoscopic Sinus Surgery (FESS) Surgery are presented. The creation/innovation of Dr. Ahila's conchal crusher will prevent raw mucosal surface area, bleeding and scope fogging with blood during FESS surgery after traditional conchoplasty. This new instrument makes it easy to reduce concha bullosa during nose and sinus surgery creating a bloodless field, no risk of destabilization or fracture of middle turbinate hence no postoperative synechiae which may otherwise lead to iatrogenic frontal sinusitis. Surgical instruments represent a major financial asset to the healthcare facility. Single instrumentation is essential to avoid costly replacements, surgeon satisfaction,

reduce costs and delays in the Operating room and enhance patient safety. Dr. Ahila's conchal crusher may facilitate the performance of concha bullosa surgery and advance the art of Endoscopic Sinus surgery to a better level.

**Keywords** Concha bullosa · FESS · Conchoplasty · Crushing

### Introduction

Endoscopic Sinus Surgery is evolving day by day there is a constant need for improvisation in terms of instrumentation, clear bloodless surgical field and good postoperative results. Identifying this requirement to address nuances in endoscopic sinus surgery can lead to the concept of designing, creating or modifying instrument and eventually patenting the device.

The applications of Dr. Ahila's Conchal Crusher for Endoscopic Concha bullosa Surgery are presented. Senior Author has devised Dr. Ahila's Conchal Crusher to facilitate time saving, bloodless, non-mucosal trauma to deal with concha bullosa with a good postoperative healing [1–3].

The need, in turn, can generate ideas or concept which may then lead to the design and development of a new instrument. This patented idea can reach out to many surgeons around the world in the form of article/surgical videos/through instrument companies to facilitate and advance the art of surgery.

### Author's Perspective: The Need and Idea

Senior Author started doing endoscopic sinus surgeries approximately 22 years ago. Initial step before sinus surgery, if there is a concha bullosa, it is dealt in many ways

**Electronic supplementary material** The online version of this article (<https://doi.org/10.1007/s12070-020-01977-9>) contains supplementary material, which is available to authorized users.

✉ Rajendran Dinesh Kumar  
dinuraj1186@gmail.com

Nagalingeswaran Ahilasamy  
nahilasamy@yahoo.com

Sivaprakasam Rajasekaran  
drsekar14@rediffmail.com

Veerasigamani Narendrakumar  
dmnarent@gmail.com

<sup>1</sup> Ahilasamy ENT Centre, Chennai, Tamil Nadu 600042, India

<sup>2</sup> Department of ENT and Head-Neck Surgery, Rajarajeswari Medical College and Hospital, Bengaluru, Karnataka 560074, India

<sup>3</sup> Pragathi ENT Clinic, Chennai, Tamil Nadu 600044, India

by conchoplasty or partial middle turbinectomy, which resulted in bleeding from incision site and raw mucosal surface area leading to postoperative crusting, destabilization and synechiae formation [4, 5]. This encouraged the Senior Author to device Dr. Ahila's Conchal crusher that could do the job safer, faster and more efficiently maintaining near normal anatomy of the middle turbinate, full olfactory function and physiology of nasal air flow.

### Dimensions of Instrument

It is like a blakesley or turbinate forceps but with smooth, flat duckbill jaws without any serrations and jaws quiet thick enough to crush the turbinates. It is available with jaw sizes of 6 mm width and 10 mm length, 6 mm width and 16 mm length, 10 mm width and 16 mm length (3 sizes) depending on the type and size of concha bullosa. It is made with medical grade stainless steel. (Fig. 1).

Several cases were operated with this device over more than 2 years (2017 to 2019); senior author has also trained many colleagues and also demonstrated the application of Dr. Ahila's conchal crusher in live Endoscopic sinus surgery in India and Abroad without any complications or postoperative healing complications.

### Sterilization

Can be done by with an enzymatic cleaner for contact time of 10–15 min, gentle cleaning of the tip of the instrument with brushes / small soft bristle tooth brush and then flushed with RO water or clean tap water. Then dried and sterilized by autoclaving or ETO gas sterilization.

Previously some surgeons used to do conchal crushing using blakesley or turbinate forceps which causes mucosal injury and abrasions leading to bleeding or postoperative synechiae. Other instrumental methods for conchal crushing lead to fracture of axilla of middle turbinate and destabilization leading to synechiae formation with lateral wall. The development of Dr. Ahila's conchal crusher is the solution to above problems. This new instrument is a game changer in endoscopic concha bullosa surgery creating a faster, clean bloodless field to operate (Figs. 2, 3).

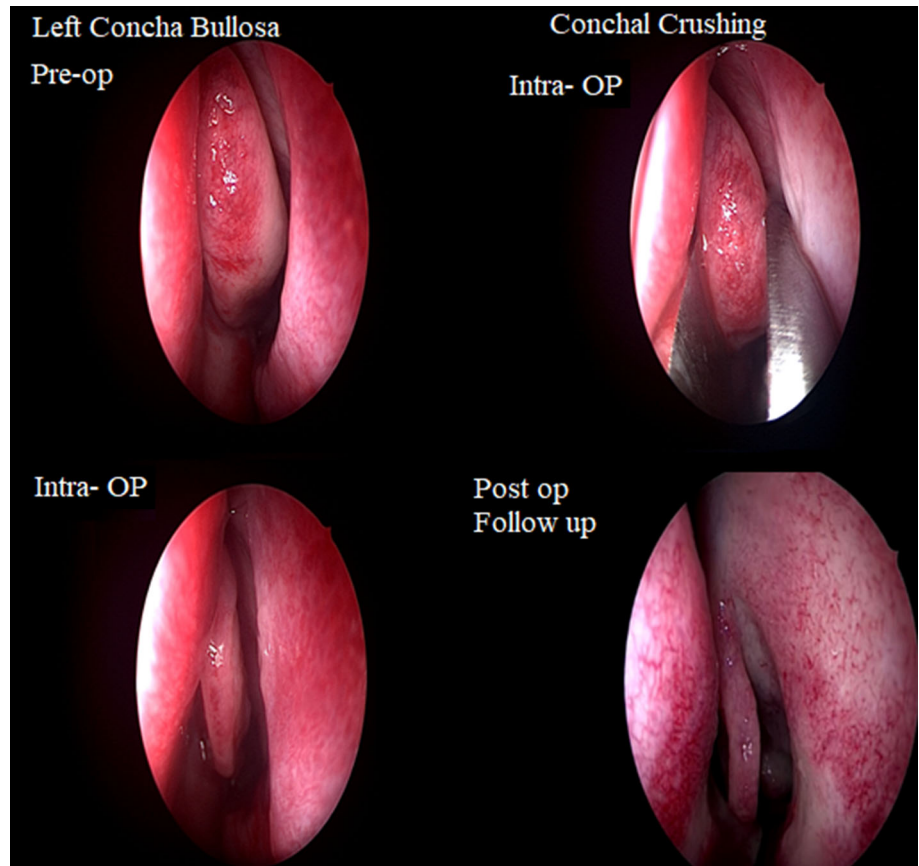
### Conclusion

Surgical instruments represent a major financial asset to the healthcare facility. Careful attention to care, handling and sterilization is essential to avoid costly replacements, surgeon satisfaction, reduce costs and delays in the operating room and enhance patient safety. Dr. Ahila's conchal

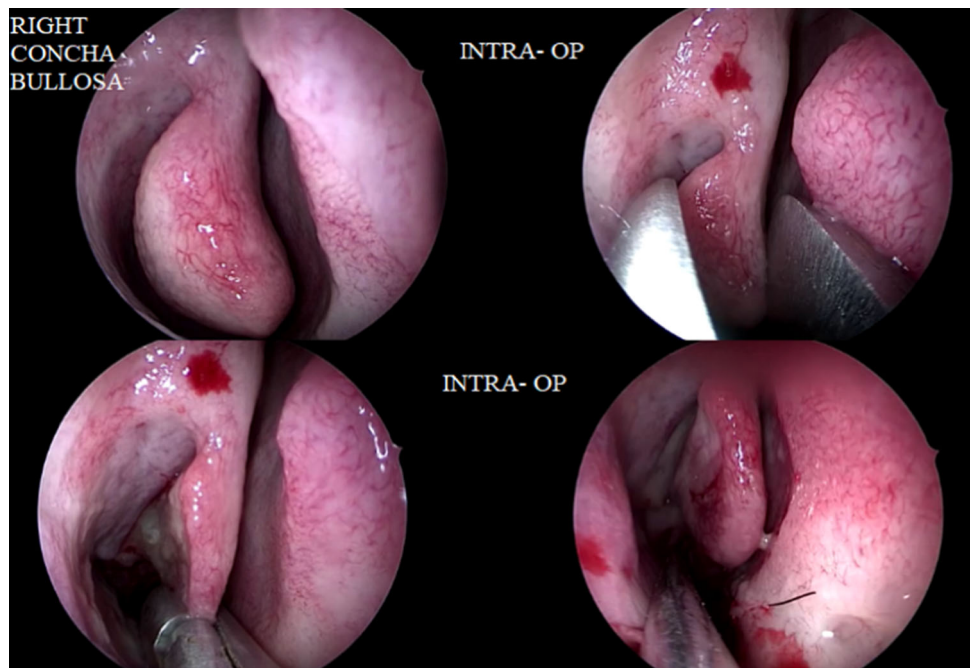
**Fig. 1** Dr. Ahila's Conchal Crusher Instrument



**Fig. 2** Surgical steps of Left sided Conchal Crushing with Dr. Ahila's Conchal Crusher



**Fig. 3** Surgical steps of Right sided Conchal Crushing with Dr. Ahila's Conchal Crusher



crusher may facilitate the performance of surgery and advance the art of Endoscopic sinus surgery to a better level. The crushing method in surgical treatment of Concha

Bullosa which preserves olfactory functions more often than the lateral resection or partial resection method in conchoplasty, as it is entirely mucosal preserving

technique. The crushing technique is a less invasive, convenient, mucosal preserving approach. This instrument is designed to provide procedural precision and tissue preservation that can help to ensure surgical outcomes. A multicentric study has been done by all four authors in their respective centres with satisfactory postoperative results in terms of improvement of patient's clinical symptoms associated with concha bullosa with Dr. Ahila's Conchal Crusher.

**Author contributions** Nagalingeswaran Ahilasamy: Performed surgery, prepared the manuscript and patient preoperative and postoperative management and follow up. Dinesh Kumar Rajendran: Review of the Instrument, Final editing the manuscript. Rajasekaran Sivaprakasam: Review of the instrument and the legends to the Figures in the article. Veerasigamani Narendrakumar: Review of the instrument and Literature.

**Funding** None.

#### **Compliance with Ethical Standards**

**Conflict of interests** Authors declare that they have no conflict of interest.

**Ethical approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of

the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from individual participant included in the study.

#### **References**

1. Tanyeri H et al (2012) Will a Crushed Concha Bullosa Form Again? *Laryngoscope* 122:956–960 (**mucosal free injury**)
2. Matti P (2010) Letter. *Laryngoscope* 120:1491
3. Akkoca Ö, Tüzüner A, Ünlü CE, Şimşek G, Kaytez SK, Uğurlu GA (2019) Comparison of the effects of 2 surgical techniques used in the treatment of concha bullosa on olfactory functions [published online ahead of print, 2019 Oct 9]. *Ear Nose Throat J*, p. 145561319881061.
4. Sabri BE et al (2014) A comparison of the long-term results of crushing and crushing with intrinsic stripping techniques in concha bullosa surgery. *Int Forum Allergy Rhinol* 4(9):753–758
5. Koçak İ, Gökler O, Doğan R (2016) Is it effective to use the crushing technique in all types of concha bullosa. *Eur Arch Otorhinolaryngol* 273(11):3775–3781

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.