

Suspension Suture Technique in Nasal Valve Collapse

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ABSTRACT

Suspension suture technique in Nasal Valve Collapse

Objective: To assess efficacy of alar suspension sutures in the management of nasal valve collapse

Method: Retrospective case-note review of patients who had alar suspension sutures inserted for management of nasal valve collapse in Doncaster Royal Infirmary from January 2009 to December 2010. Subjective nasal congestion reported by patients pre and post procedure was measured using Visual analogue scale (VAS 0-10). Objective measurement using Peak Inspiratory Flow Rate (PIFR) before and at least three months after the operation was also performed.

Results: Thirty five patients who had alar suspension sutures inserted were identified. Nine patients were excluded from the study as 6 had concurrent procedures carried out on septum, turbinates and lacrimal duct and 3 patients' case-notes were unavailable. 26 patients were included in our study. The average VAS score improvement was by 5 points (p-value=0.00) and PIFR increased by 63.7% (p value= 0.00)

Conclusion: Our study shows a significant improvement in patient's symptoms following insertion of alar suspension suture. This is a short and well tolerated procedure with minimal side effects.

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INTRODUCTION

The concept of the nasal valve was first described by Mink in 1903. In 1970 Bridger then defined it as the 'flow limiting segment' of the nasal airway.

The nasal valve is a complex structure and is prone to collapse if there is a loss of cartilage resilience. This can be due to surgery, trauma, ageing process or congenital weakness of cartilage.

There are different surgical options for the management of nasal valve collapse¹ and this can include graft insertion², flare or suspension suture insertion^{3,4}.

AIM

The aim of our study is to evaluate the efficacy of using our technique of inserting alar suspension sutures in the management of nasal valve collapse.

SURGICAL TECHNIQUE

Patients are assessed following topical decongestion using the Modified Cottle's Test. The site where maximal symptom relief is achieved by Modified Cottle's Test is then carefully noted.

A 3-0 Prolene suture is inserted at this site in the nasal vestibule between skin and the lateral crura.

A 1 cm incision is made in the medial end of the inferior orbital margin after infiltration with lignocaine and adrenaline reaching the muscular layer.

A straightened 42G Mayo's Needle is used to pass both ends the suture through their exit wound respectively in the vestibule to ensure the suture is not exposed and is brought out through the incision.

A 32G Mayo's Needle is then used to pass the suture through the periosteum, where it is tightened and tied.

The orbital margin incision is the closed in 2 layers using 50 Vicryl Rapide.

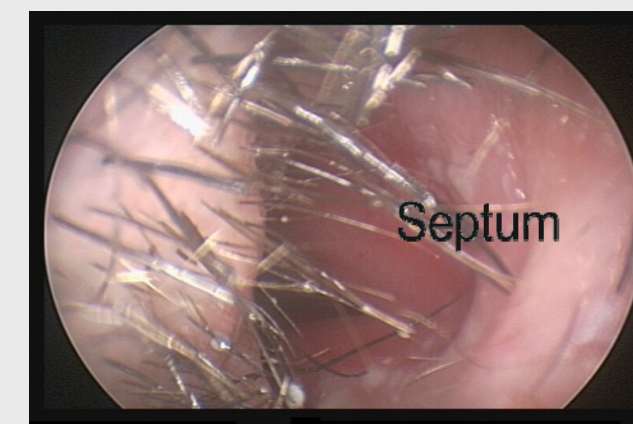
The patient is discharged home with 1 week course of oral antibiotics and topical polymyxin Ointment.



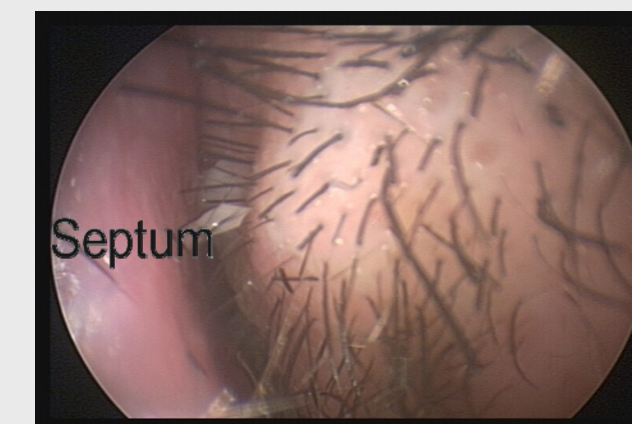
Pre-op: Alar position at rest



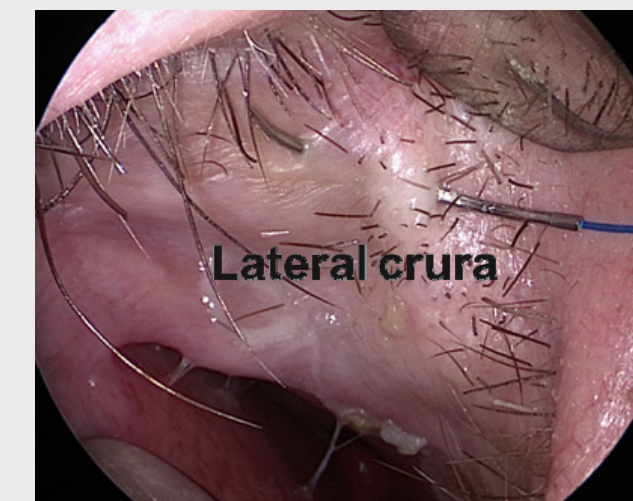
Pre-op: Alar collapse when sniffing



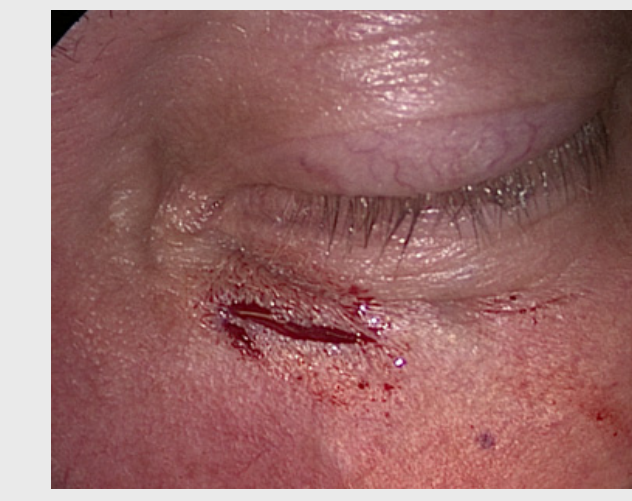
Endoscopic appearance Right nasal airway pre-op under GA



Endoscopic appearance Left nasal airway pre-op under GA



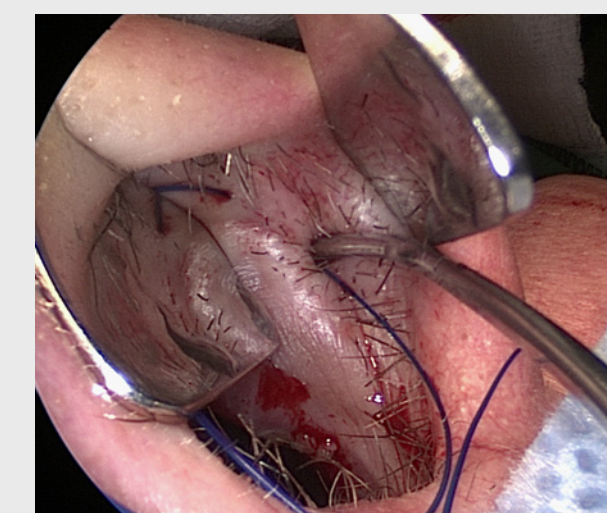
Prolene 3/0 suture inserted between mucosa and lateral crura



1cm incision in the medial end of inferior orbital margin



Straightening of 42G Needle



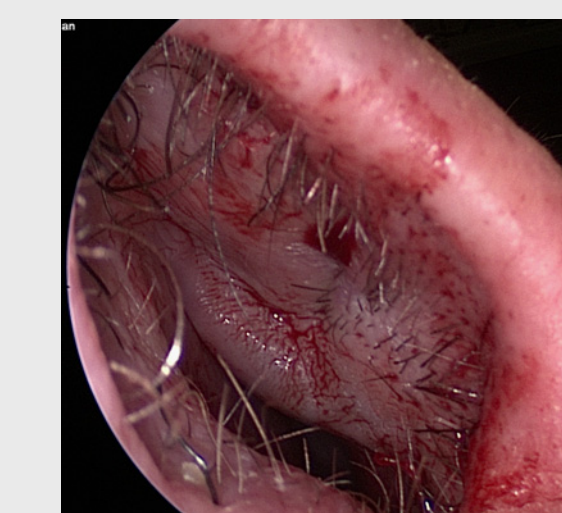
Using 42G Mayo's needle to pass suture through exit wound



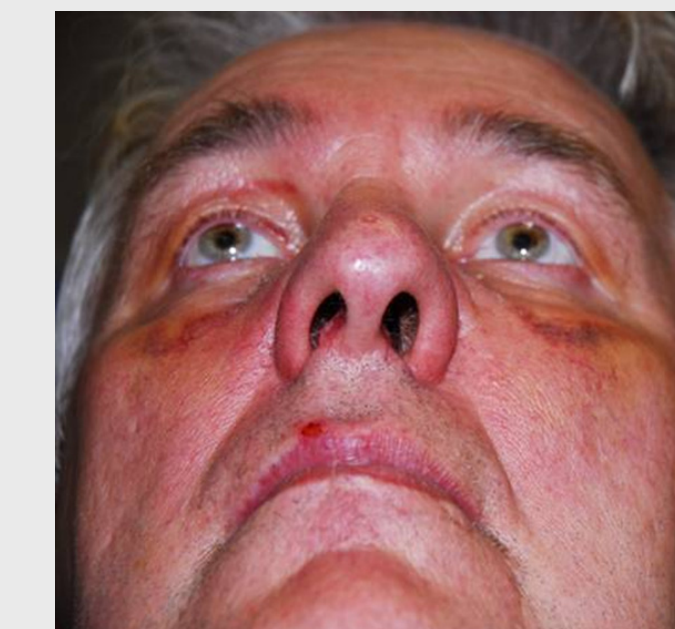
Suture brought out of incision



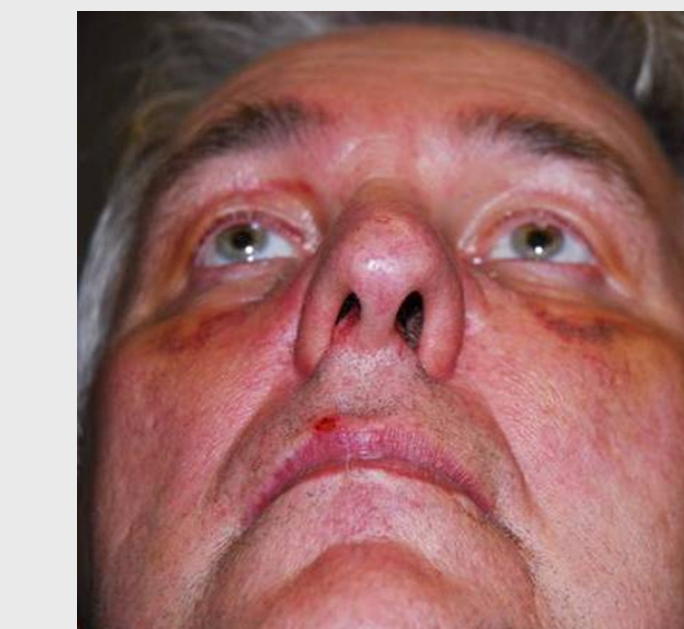
Sutures tightened



End appearance of suture



Post op: Alar position at rest



Post op: Alar position during sniffing

METHOD

A retrospective case note review was conducted on patients who had alar suspension sutures inserted between January 2009 to December 2010 in Doncaster Royal Infirmary.

Patients who had concurrent procedures carried out on the septum, turbinates and lacrimal duct were excluded from the study.

The Visual analogue scale (VAS) was used to assess patients' symptoms subjectively and peak inspiratory flow rates (PIFR) were used to assess symptoms objectively.

The VAS scale:

0-----10
No congestion Completely blocked nose

Peak inspiratory Flow Rate Measure:

Peak inspiratory flow rate measured using peak inspiratory flow meter



RESULTS

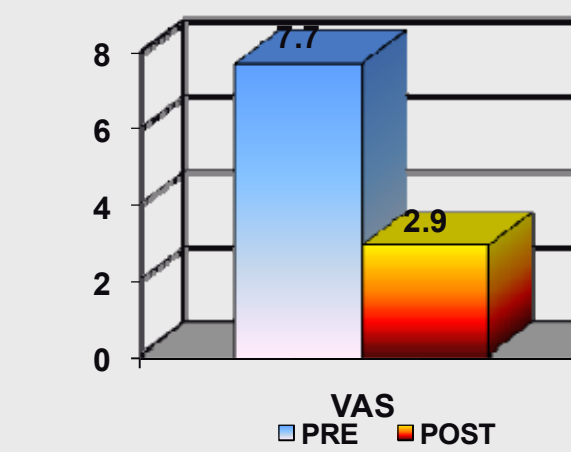
35 patients identified

9 patients excluded (6 concurrent procedures, 3 –casenotes not found)

26 patients included in study - 15 male and 11 female

23 patients had bilateral suture insertion

2 had left suture insertion and 1 had right suture insertion



The mean difference in VAS is 4.97 (CI 4.48-5.46) p value= 0.00

Complications

2 (8%) developed slipped sutures

2 (8%) developed post operative neuralgia controlled with low dose amitriptyline.

CONCLUSIONS

This study has shown the efficacy of this surgical technique in improving symptoms in patients with nasal valve collapse by way of improvement in both the objective measurement of Peak Inspiratory Flow Rate (PIFR) and the subjective measurement of Visual analogue scale. (VAS). This is supported by the findings of Lee et al³ and Paniello et al⁵.

Ala suspension sutures are well tolerated and has minimal side effects compared to other surgical techniques. For example, when using grafts this can be complicated by migration and change in external appearance of nose⁶.

Graft insertion is technically more demanding and requires more theatre time, compared to insertion of ala suspension sutures hence this makes suspension sutures more cost effective.

The improvement in nasal air flow also correlated with symptomatic improvement for obstruction unlike septoplasty as shown by Tompos et al⁷.

This leads us to conclude that ala suspension suture is a reliable, safe and effective technique in managing nasal valve collapse.

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