

External rhinoplasty. Comparison of two approaches*

J. S. Farrow, J. Atkins

Eye, Ear and Throat Hospital, Shrewsbury, United Kingdom

SUMMARY

This paper compares two different techniques of external rhinoplasty, in which the lower lateral cartilages are either elevated with the columellar skin (i.e., Gillies-Meyer approach) or left attached to the main body of the nose (i.e., Rethi-Sercer approach). Both techniques give good access and exposure, but we found the Gillies-Meyer approach somewhat easier to perform. It can also be used to provide extended access if difficulty is experienced during a closed rhinoplasty operation.

Key words: external rhinoplasty, Rethi-Sercer approach, Gillies-Meyer approach

INTRODUCTION

Septorhinoplasty via an external approach gives excellent visualization of the nasal vault and septum and has a special place in the management of the difficult post-traumatic nose, as well as in the surgery of nasal septal perforations (Arnstein and Burke, 1989) and tumours. This paper compares two different external-approach techniques, both of which are characterized by a short incision across the columella, so allowing access to the nasal skeleton. In the Gillies-Meyer approach the medial crura of the lower lateral cartilages are elevated with the columellar skin, while in the Rethi-Sercer approach the columellar skin is elevated alone.

The original rhinoplasties performed by Joseph (1932) were via an external approach. However, he soon changed his technique to an endonasal approach - which unknown to him had already been described by Roe in 1887 - and it is this technique which is used today for most cosmetic rhinoplasties. In 1958, Sercer published his "decortication" technique, utilizing a basal nasal incision - which had been previously described by Rethi (1929) - followed by elevation of the columellar skin from the lower lateral cartilages and nasal dorsum. Sercer's assistant, Padovan (1972), subsequently described this technique in the U.S.A. where it has become the usual approach for the external rhinoplasty operation. However, we will refer to it in this paper as the "Rethi-Sercer approach". It has remained virtually unchanged except for minor modifications of the incision across the columella (Adamson et al., 1990).

Gillies (1923) and Lexer (1929) independently described a technique of external rhinoplasty where the medial crura of the lower lateral cartilages were elevated with the columellar skin. Meyer subsequently modified and perfected this approach by adding intercartilaginous incisions

(Denecke and Meyer, 1967; Meyer, 1988). In this paper, we will refer to it as the "Gillies-Meyer approach."

METHODS

Surgical technique

(1) **RETHI-SERCER APPROACH:** Rethi's incision consists of two marginal incisions (infralobular) along the lower margins of the lower lateral cartilages which are joined across the columella just above the alar feet (Figures 1 and 2). The columellar incision is usually made in the form of either a "V", an inverted "V" or a step. The skin is elevated from the underlying lower lateral cartilages first along the conjoined medial crura and then along each lateral crus. Decollement of the nasal dorsum then follows and provides a wide exposure of the whole of the nasal vault.

(2) **GILLIES-MEYER APPROACH:** The incision begins by performing a complete transfixion through the membranous septum and then extending the incision into bilateral intercartilaginous incisions in the fashion of the closed Joseph approach. The columella is then cut across through its base below the attachment of the alar feet. This incision takes the form of an open "V", working from the external surface of the columella to the lower end of the transfixion incision on each side. This allows the columella to be elevated like an "elephant's trunk" (Figures 3 and 4). (Two small arteries, branches of the superior labial artery, often require diathermy at this stage.) We refer to this technique as "columellotomy". Gillies described his incision in 1957 as follows: "Pass a No. 11 blade through the membranous septum near the tip and carry it to the floor of the vestibule, turn it at right angles and bring it out at the base of the columella with a flick." We do not recommend this "flick" technique because it may lead to inadvertent division of the medial crura and so result in loss of tip

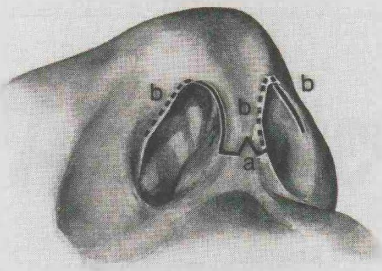


Figure 1. Rethi-Sercer approach, external view to show incisions. A: columellar incision; B: infralobular (rim) incisions.

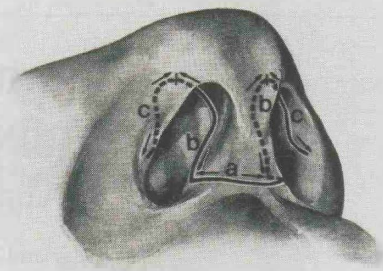


Figure 3. Gillies-Meyer approach, external view. A: "columelotomy" (shown here as a straight line, although we would normally use a "V" incision.); B: transfixion incision; C: intercartilaginous incision.

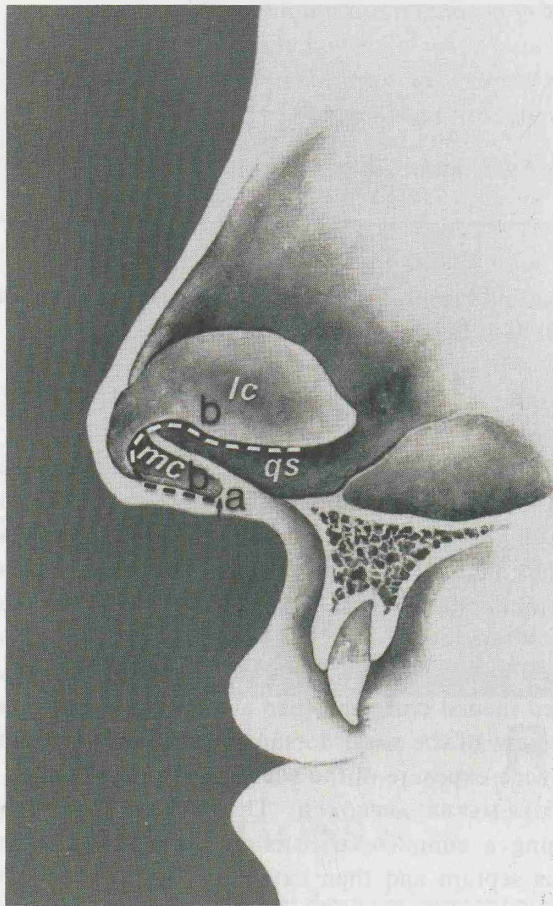


Figure 2. Rethi-Sercer approach, sagittal section of nose to show incisions. MC: medial crus of lower lateral cartilage; LC: lateral crus; A: columellar incision; B: infralobular incision; QS: septal cartilage (quadrate septum).

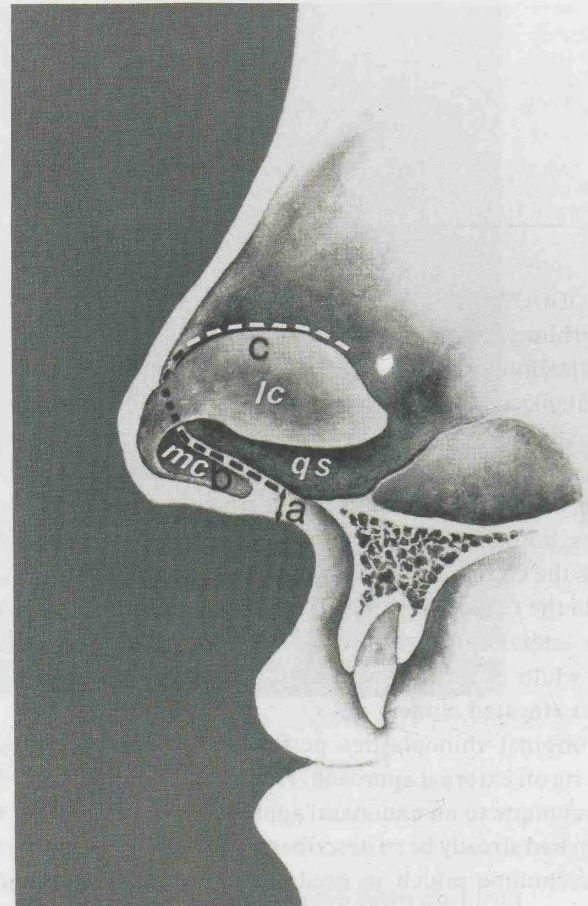


Figure 4. Gillies-Meyer approach, sagittal section of nose. MC: medial crus of lower lateral cartilage; LC: lateral crus; A: columelotomy; B: transfixion incision; C: intercartilaginous incision; QS: septal cartilage.

support and possible columellar retraction. In addition, it would result in a straight columellar scar which is less cosmetically satisfactory.

Alotomy incisions can be added to both techniques to provide additional exposure as suggested by Meyer (1988) and Hauberisser (1956).

In both approaches, we closed the columellar wounds with 6.0 nylon on 12-mm needles (Ethicon 1610). The columelotomy incision required two or three buried 4.0 Vicryl sutures to the subcutaneous layer. The intranasal incisions were closed with 4.0 Vicryl and the marginal incisions with

6.0 plain catgut. The columellar sutures were removed on the fifth post-operative day. The usual external and internal nasal splints were removed two weeks after operation and the patients were subsequently seen three and six months after operation, and the cosmetic result of the columellar scar assessed.

Comparison of exposure and closure times

We felt that a comparison of the times taken to open and close the nose by each approach might give an indication of the ease with which each may be performed. We therefore

Table 1. Exposure and closure times with the Rethi-Sercer approach.

case	exposure time	closure time
1	16 min 10 s	9 min 30 s
2	14 min	11 min 50 s
3	8 min 45 s	9 min 50 s
4	11 min 50 s	16 min
5	13 min 50 s	12 min 7 s
6	8 min 10 s	9 min 8 s
7	9 min 25 s	17 min 10 s
8	8 min 30 s	9 min 45 s
9	7 min 43 s	9 min 10 s
10	9 min 10 s	10 min 20 s

Table 2. Exposure and closure times with the Gillies-Meyer approach

case	exposure time	closure time
11	4 min 45 s	10 min
12	4 min 45 s	14 min 35 s
13	5 min 15 s	11 min 10 s
14	7 min	12 min
15	5 min 20 s	10 min 20 s
16	5 min	14 min
17	4 min	12 min
18	8 min	12 min
19	3 min 20 s	15 min 15 s
20	4 min 15 s	11 min 50 s
21	4 min 51 s	12 min 5 s
22	3 min 56 s	9 min 58 s

measured these times taken for exposure and closure in a short series of cases. Ten operations by the Rethi-Sercer approach and 12 by the Gillies-Meyer approach were performed and the "unrushed" times of exposure and closure for each type of approach were measured. In order to produce comparable results the operations were all performed by the same surgeon (JA).

In each case the exposure time was measured from the start of the first incision to the completion of full decollement of the nasal vault. The closure time was the time taken to close the whole wound from first to last suture. This included the columellar, septal, intercartilaginous and marginal incisions (as appropriate) as well as the insertion of subcutaneous sutures to the columelotomy in the Gillies-Meyer approach.

RESULTS

The times of exposure and closure for the two approaches are given in Tables 1 and 2. Mean exposure and closure times for the Rethi-Sercer approach were 10 min 48 s and 11 min 29 s, respectively. For the Gillies-Meyer approach the times were 4 min 47 s and 12 min 6 s, respectively. Statistical analysis (Student's *t*-test) shows the difference between the exposure times for the two approaches to be highly significant ($p < 0.0005$), while there was no significant difference between the closure times ($p < 0.375$).

DISCUSSION

Exposure and access

The Gillies-Meyer approach provides excellent exposure of the bony and upper cartilaginous vault (i.e. upper lateral cartilages and septum) as well as the anterior nasal fossa. We feel this operation is ideal for insertion of grafts for saddle-nose defects, repair of septal perforations and excision of septal tumours.

The Gillies-Meyer approach can be considered as an extension of the classic closed Joseph rhinoplasty and is therefore easily learnt by the ENT-surgeon. Moreover, if difficulty in access is encountered during a Joseph rhinoplasty, a columelotomy may be performed, so rapidly converting a closed operation into an open one.

The lower cartilaginous vault is beautifully exposed in the Rethi-Sercer operation allowing examination and assessment of the lower lateral cartilages with their medial and lateral crura under direct vision. We feel that this is the operation of choice for repair of the difficult nasal tip.

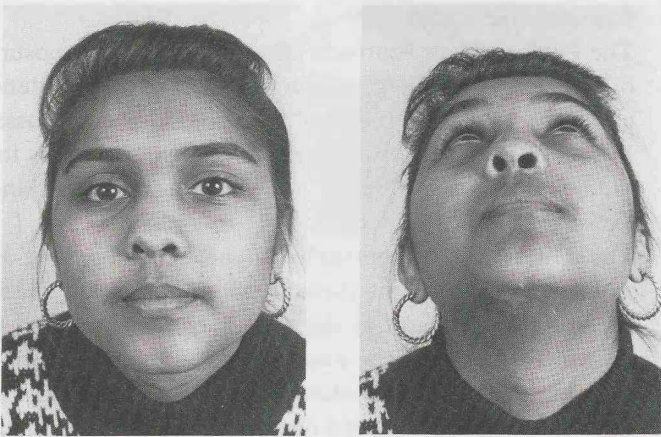
During the Gillies-Meyer operation the nasal tip cartilages are retracted superiorly with the "elephant's trunk"; therefore, the view of the lower lateral cartilages is not as good as in the Rethi-Sercer approach. However, a retrograde approach to the lower laterals is easily accomplished via the intercartilaginous part of the incision, giving adequate access for most tip surgery. Moreover, small grafts can be inserted between the medial crura just as easily as in the Rethi-Sercer approach to provide additional tip support.

The nasal septum is well visualized in both operations. In the Gillies-Meyer operation the septal mucoperichondrium can be approached from either side. However, in the Rethi-Sercer approach the septum must be approached by separating the medial crura and domes of the lower lateral cartilages, which must then be accurately sutured together at the end of the operation. We have, however, found that access to the anterior nasal spine is occasionally difficult and a separate short hemitransfixion incision in the membranous septum may be necessary.

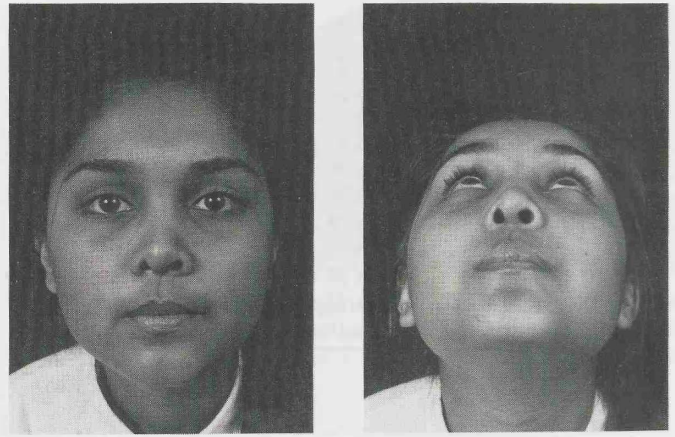
Cosmetic results and side effects

In no case was the cosmetic result of the columellar scar found to be unacceptable to the patient, whichever approach was used. As Arnstein and Burke (1989) have pointed out, the columellar scar is out of the direct line of vision when the face is viewed frontally. Our cosmetic results are similar to theirs and also to those of Adamson et al. (1990). In fact, in many of our cases the scar was virtually invisible six months post-operatively. The healed scars are illustrated in Figures 5-18.

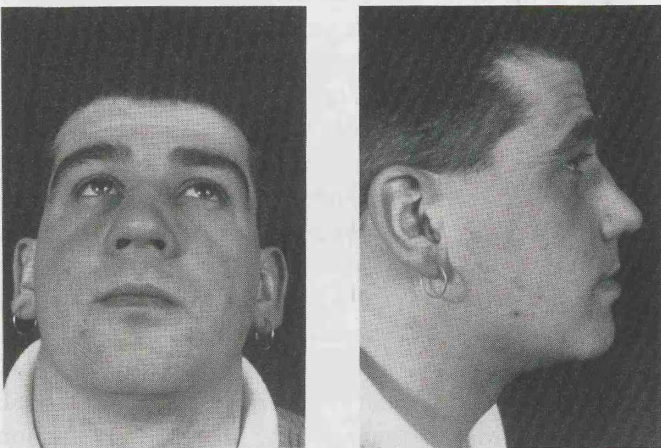
The only side effect complained of by a few patients was a sensation of numbness in the distal columella and nasal tip. In none of these patients could an objective tactile sensory loss be demonstrated, and in all but one patient the sensation had settled within six months of the operation. In one case, the columellar skin was "button-holed" during elevation when using the Rethi-Sercer approach. This was



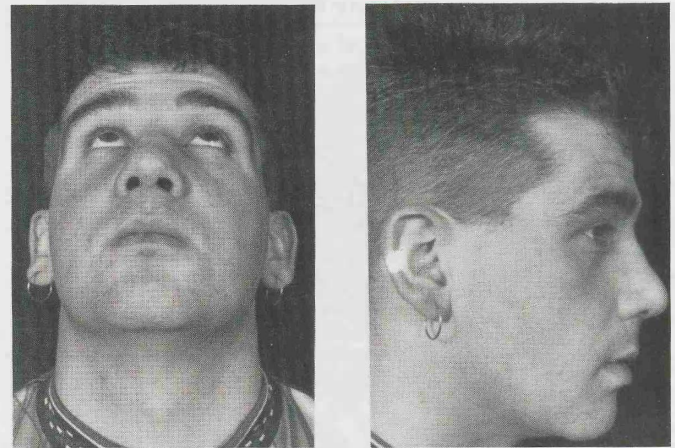
Figures 5 and 6 Rethi-Sercer approach, case No. 6. Pre-operative frontal and basal views of nose.



Figures 7 and 8 Case No. 6, post-operative frontal and basal views of nose.



Figures 9 and 10. Gillies-Meyer approach, case No. 13. Pre-operative basal and lateral views of nose.



Figures 11 and 12. Case No. 13, post-operative basal and lateral views of nose. The columellotomy often appears to heal as a straight line, despite being created as an open "V".

repaired with 6.0 nylon with no impairment of the final cosmetic result.

The Gillies-Meyer approach has been less popular due to a reported incidence of necrosis of the "elephant's trunk" flap (Adamson, 1988). However, there was no evidence of this in our series.

There have also been reports of oedema of the nasal tip following external approach rhinoplasty (Adamson et al., 1990), but we have not seen this complication in our series.

Comments on technique and exposure and closure times

We measured the times of exposure and closure for the two approaches with the intention of estimating the ease with which they can be performed. The significant difference between the exposure times reported above is in agreement with our experience that the Gillies-Meyer approach is technically easier to perform. The reinforcement of the columellar skin by the medial crura of the lower lateral cartilages in the "elephant's trunk" largely accounts for this. We found that elevation of the columellar skin in Sercer's "decortication" technique was more difficult to perform and there was a real risk of "button-holing" the skin flap and damaging the underlying alar cartilages.

Table 3. Advantages and disadvantages of the Gillies-Meyer approach

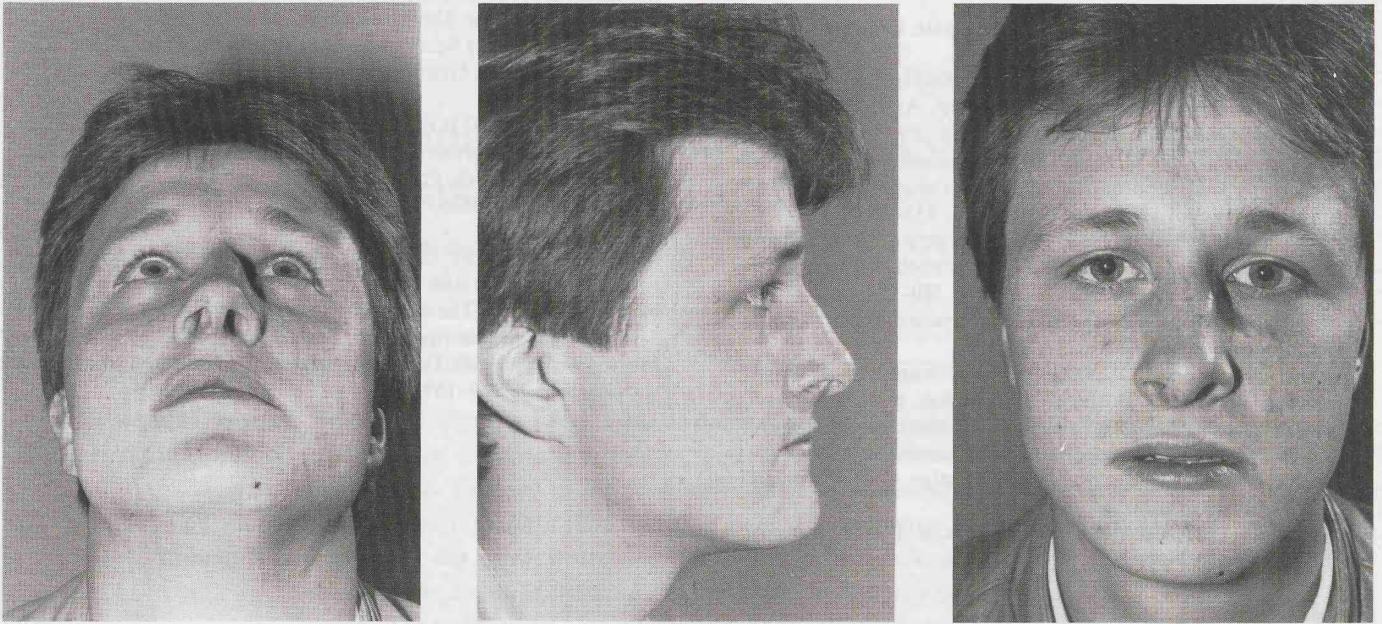
Advantages:

1. technically easier
2. more robust columellar flap
3. a closed rhinoplasty can easily be converted to an open one using this approach
4. excellent view of the middle and upper vaults of the nose unobstructed by the lower lateral cartilages
5. excellent view of the caudal end of septum and anterior nasal spine
6. the scar lies in a natural shadow at the junction between upper lip and columella

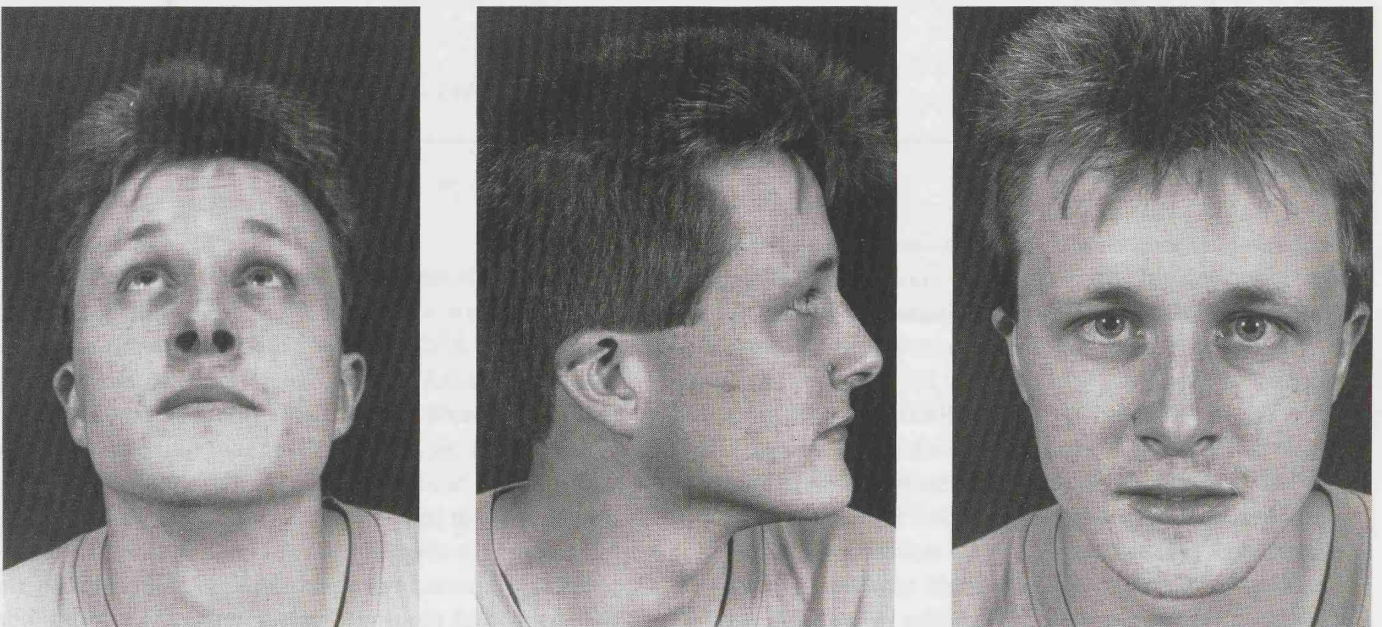
Disadvantages:

1. impaired access to the nasal tip; retrograde approach must be used to trim cephalic margins
2. the problems inherent with all intranasal scars at the nasal valve area

The closure times for the two approaches are very similar, that for the Gillies-Meyer approach being slightly longer. This is probably because the Gillies-Meyer skin incision is rather longer and also requires a subcutaneous layer of sutures.



Figures 13-15. Gillies-Meyer approach, case No. 16. Pre-operative basal, lateral, and frontal views of nose.



Figures 16-18. Case No. 16: post-operative basal, lateral, and frontal views of nose.

Table 4 Advantages and disadvantages of the Rethi-Sercer approach

Advantages:

1. excellent exposure of the nasal tip
2. good exposure of the middle and upper nasal vaults
3. no intranasal incisions and therefore no risk of secondary deformity in the nasal valve area

Disadvantages:

1. technically more difficult
2. risk of "button-holing" the columellar flap
3. risk of damage to the alar cartilages
4. impaired access to the anterior nasal spine
5. columellar scar rather more obvious in the early post-operative phase

Choice of approach

The advantages and disadvantages of each approach are summarized in Tables 3 and 4. To some extent the choice of approach must depend on the preference of each individual surgeon. Both provide added exposure of the nasal dorsum in the difficult case. The Gillies-Meyer approach gives better access to the difficult septum, while the Rethi-Sercer approach gives unrivalled access to the nasal tip. The Gillies-Meyer approach is considerably easier to perform than the Rethi-Sercer approach and is no more difficult to close, and would, therefore, be our own favoured approach in most cases. However, each approach has its individual merits and we feel that both should be in the repertoire of the rhinoplasty surgeon.

REFERENCES

1. Adamson, PA (1988) Rhinoplasty: Our past. *Fae Plast Surg* 5: 93-96.
2. Adamson PA, Smith O, Trapper GJ (1990) Incision and scar analysis in open (external) rhinoplasty. *Arch Otolaryngol Head Neck Surg* 116: 671-675.
3. Arnstein DP, Berke GS (1989) Surgical considerations in the open rhinoplasty approach to closure of septal perforations. *Arch Otolaryngol Head Neck Surg* 115: 435-438.
4. Denecke HJ, Meyer R (1967) *Plastic Surgery of the Head and Neck, Volume I: Corrective and Reconstructive Rhinoplasty*. Springer-Verlag, Berlin/New York, pp. 180-181.
5. Gillies HD (1923) Case of depressed fracture of the nasal arch. *Proc Royal Soc Med* 16: 6.
6. Gillies HD, Millard DR (1957) *Principles and Art of Plastic Surgery, Volume II*. Butterworth, London, p. 567.
7. Hauberisser E (1956) Zur Operationstechnik missgestalteter und verlagerter Nasenknorpel. *J Med Kosmetik* 4: 37-40.
8. Joseph J (1932) *Nasalplastik und Sonstige Gesichtsplastik*. Curt Kabitzsch, Leipzig.
9. Joseph J (1987) *Rhinoplasty and Facial Plastic Surgery*. Phoenix Press, Phoenix.
10. Lexer E (1929) Kosmetische Operationen der Nase. In: *HNO-Heilkunde. Von Denker-Kahler, Bd V.S.*, p. 991.
11. Meyer R (1988) *Secondary and Functional Rhinoplasty. The Difficult Nose*. Grune and Stratton, New York/London, pp. 42 and 193.
12. Padovan IF (1972) External approach in rhinoplasty. In: J Connolly, JT Dickinson (Eds.) *Plastic and Reconstructive Surgery of Face and Neck. Proceedings of the First International Symposium, Volume I*. George-Thieme Verlag, Stuttgart, pp. 143-146.
13. Rethi, A (1929) Ueber die korrekativen Operationen der Nasendeformitäten. *Chirurg* 1: 1103-1113.
14. Roe, JO (1887) The deformity termed Pug Nose and its correction by a simple operation. *Med Rec* 31: 621.
15. Sercer, A (1958) Dekortikacija nosa. *Chir Maxillofac Plast (Zagreb)* 1: 149-158.

J. S Farrow, FRCS
 Eye, Ear and Throat Hospital
 Murivance
 Shrewsbury SY1 1JS
 United Kingdom