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Trauma reduction in rhinoplastic surgery

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SUMMARY

Operative procedures for bony pyramid surgery of the nose, using micro-osteotomes to reduce surgical trauma, are described. Over the last seven years experience with this refined technique has shown a considerable reduction in postoperative ecchymosis and oedema.

INTRODUCTION

Surgery of the bony pyramid of the nose is generally seen as the most traumatic part of rhinoplasty.

Mobilizing the nasal bones with the traditional operative techniques and instruments (Figure 1) may cause considerable ecchymosis and oedema. It is therefore a generally accepted procedure to perform osteotomies in the last stage of the operation, immediately followed by internal and external nasal dressing, to reduce local tissue reaction.

TRAUMA REDUCING PROCEDURES

In the last decade several authors introduced new techniques in bony vault surgery to reduce trauma, resulting in quicker and better healing (Rees, 1980; Mackay, 1984; Peck, 1984; Tardy and Denneny, 1984; Meyer, 1988; Berman, 1989).

The main points are:

- precise placement of the local vasoconstrictive and anaesthetic solution (in addition to general anaesthesia);
- the use of micro-osteotomes;
- preservation of periosteal attachment;
- elimination of the traditional transverse osteotomies;
- septal suturing and if necessary splinting to replace or shorten the duration of internal nasal dressing.

Well placed local anaesthesia in the extra periosteal surgical planes (1:80.000 epinefrine with 2% lidocaine) at least 15 minutes prior to surgical procedure on the bony pyramid, medial and lateral to the ascending process of the maxilla along the intended course of the lateral osteotomies, is very helpful to reduce bleeding.

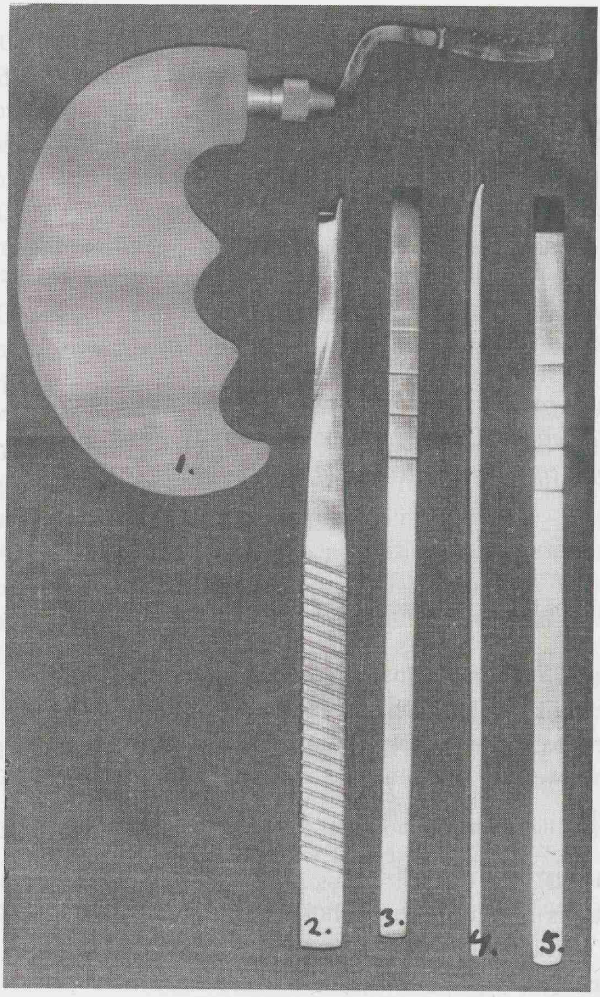


Figure 1.
Traditional instruments for osteotomies:
1. Cottle saw;
2. garded osteotome;
3. straight osteotome;
4. curved osteotome;
5. chisel.

Lateral osteotomies can easily be made with a 2 mm osteotome (Figure 2) or in selected cases, very thick nasal bones, with a 3 mm osteotome. They can be performed either intranasally (Rees, 1980; Tardy and Denneny, 1984; Bermann, 1989) or percutaneously (Mackay, 1984; Meyer, 1988).

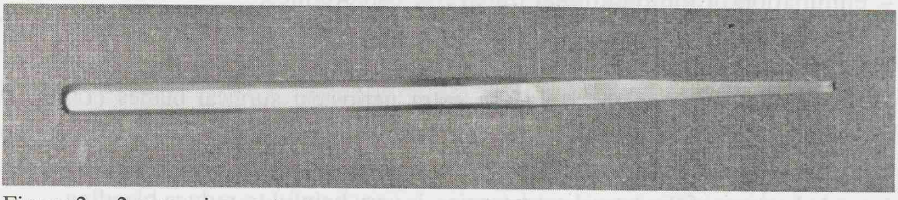


Figure 2. 2 mm micro-osteotome.

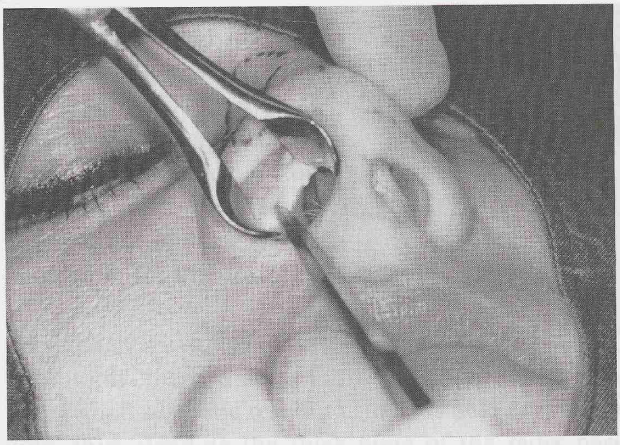


Figure 3.
Insertion of the 2 mm osteotome through the soft tissue of the lateral wall of the piriform aperture, starting on the ascending process of the maxilla at the superior margin of the inferior turbinate.

Intranasally the micro-osteotome will be inserted through the soft tissue of the lateral wall of the piriform aperture, starting on the ascending process of the maxilla at the superior margin of the inferior turbinate (Figure 3), then going laterally for a low lateral osteotomy, preserving a bony triangle at the base of the lateral wall of the piriform aperture (Figure 4). This prevents unintentional narrowing of the airway along the nasal floor after repositioning the bony pyramid. There is no necessity to make subperiosteal tunnels. This results in extra trauma reduction. The periosteum stays largely intact and functions as an internal splint.

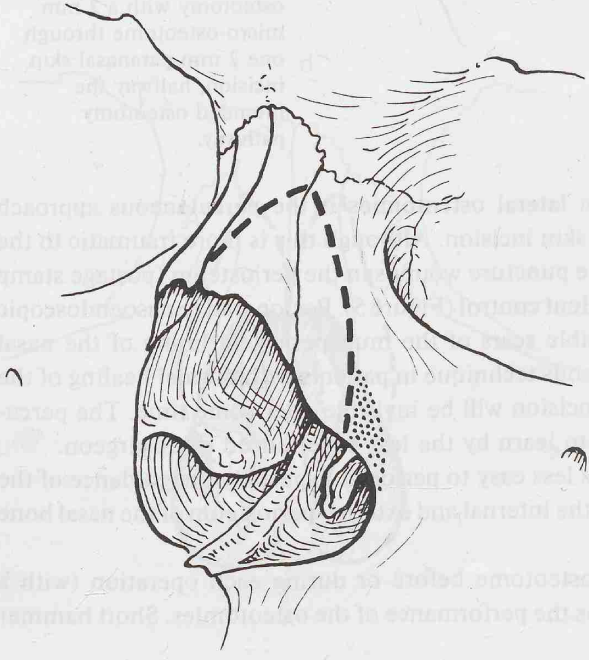
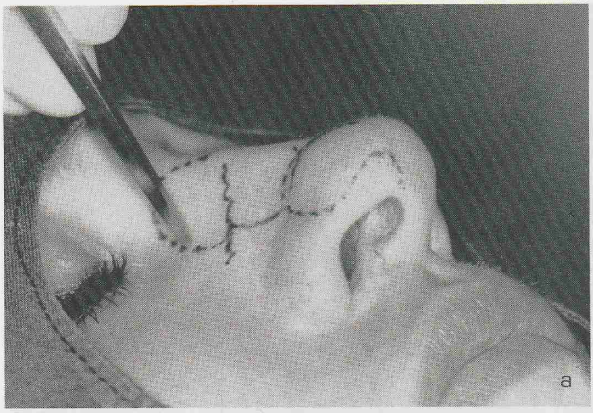


Figure 4.
The dashed lines show the pathway of the medial-oblique and lateral micro-osteotomies. The dotted area represents the preserved bony triangle at the base of the lateral wall of the apertura piriformis.



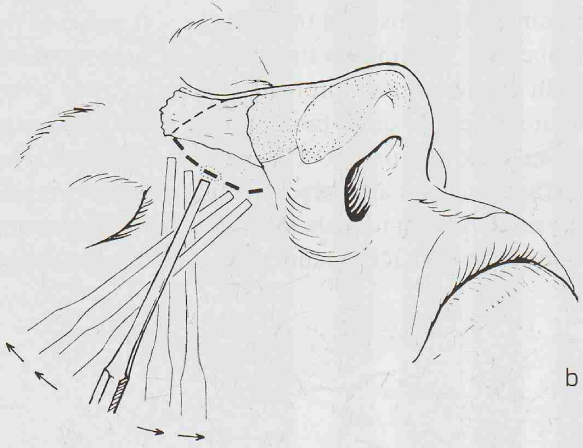


Figure 5.
Percutaneous lateral osteotomy with a 2 mm micro-osteotome through one 2 mm paranasal skin incision, halfway the intended osteotomy pathway.

The other way to perform lateral osteotomies is the percutaneous approach through a 2 mm paranasal skin incision. Although this is more traumatic to the periosteum causing mutiple puncture wounds in the periosteum (postage stamp osteotomies), it gives excellent control (Figure 5). Postoperative nasoendoscopic examination shows no visible scars of the mucoperiosteal lining of the nasal bones. Using the percutaneous technique in patients with normal healing of the skin, the small paranasal incision will be invisible after some time. The percutaneous technique is easy to learn by the less experienced rhinosurgeon.
The intranasal technique is less easy to perform. Especially the guidance of the micro-osteotome between the internal and external periosteum of the nasal bone demands subtle handling.
Sharpening of the micro-osteotome before or during each operation (with a sterile whetstone) facilitates the performance of the osteotomies. Short hammer

strokes and readjustment of the micro-osteotome after sliding off the bone, prevents unnecessary lesions of the periosteum.
An asymmetric bony pyramid requires often supplementary intermediate osteotomies. In case of severe asymmetry the technique of wedge resection of the bony wall is indicated to assure permanent symmetry of the bony pyramid (Huizing, 1975; Pirsig and Könings, 1988). To resect a bony wedge elevation of the internal and external periosteum is obligatory. So, in these cases there is no indication for the use of a micro-osteotome.

If a slightly curved lateral osteotomy is combined with medial-oblique osteotomy, there is no need for the traditional transverse osteotomy.
For a good aesthetic result it usually is not necessary to surpass the intercanthal line, thus avoiding the thick bone of the radix nasi (Peck, 1984; Tardy and Denneny, 1984) (Figure 6).
Intranasal packing, if at all necessary, should stay as briefly as possible, depending on the extent of the surgical procedure, to prevent stagnation of venous and lymphe drainage (Anderson and Ries, 1986).
The periosteum being left attached to the nasal bone there is no special need for an internal splint.
The internal nasal dressing applied after septal surgery to prevent subperichondrial haematomas can very well be replaced by septal mattress sutures (Reiter et al., 1989) (Figure 7).

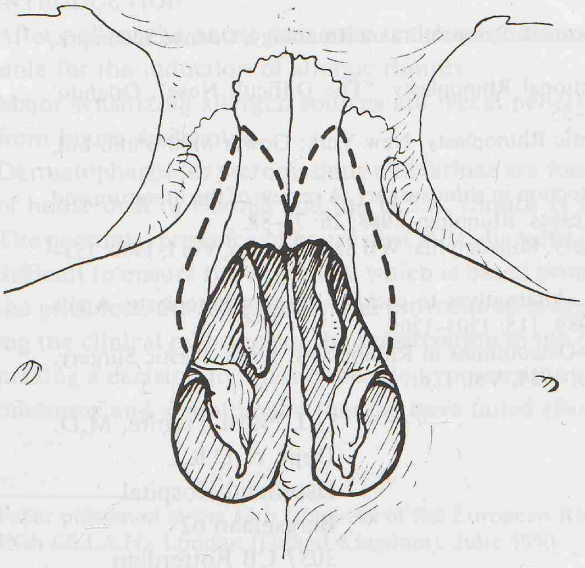


Figure 6.
Medial-oblique and lateral osteotomies not surpassing the intercanthal line.

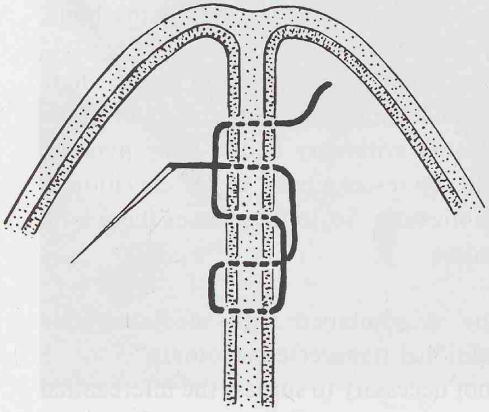


Figure 7.
Septal mattress sutures to prevent subperichondrial haematomas.

CONCLUSION

Reduction of surgical trauma in bony vault surgery can be achieved with the above described operative procedures, using micro-osteotomes.

Over the last seven years experience with this refined technique has shown minimal if any ecchymosis and oedema; this results in better and quicker healing and shortens the postoperative period considerably.

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