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Fractured-nose reduction under local anaesthesia. Is it acceptable to the patient?

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SUMMARY

This article examines patients' acceptance of fractured-nose reduction under local anaesthesia, both objectively and subjectively. At each stage of the reduction the level of the discomfort, the patients' experiences were recorded. The success rate of complete reduction of the nasal fracture was found to be 71% and this was similar to that obtained in other studies that have used general anaesthesia. An overall level of discomfort/or the procedure in terms a layman can understand was obtained by comparing the manipulation with that of having a tooth filled at the dentist. Sixty-three percent of the patients said that the nasal fracture reduction was no worse or the same as a dental filling. Our study showed that 96% of patients would be willing to undergo the same local anaesthetic procedure if they fractured their nose a second time. We conclude that it is possible to reduce the majority of fractured noses adequately with little inconvenience to the patient under local anaesthesia, and so we recommend that this procedure should be considered in the first-line treatment of the displaced fractured nose.

INTRODUCTION

It has been shown that the cosmetic result obtained after reduction of a displaced fractured nose is identical irrespective of the form of anaesthesia for the procedure (Watson et al., 1988; Waldron et al., 1989). A previous study by Watson et al. (1988) compared the cosmetic and functional results of 40 patients, half of whom had their nasal fracture reduced under local anaesthesia and half under general anaesthesia. There was no significant difference in the outcome when these methods were compared. If this is indeed so, then the substantial risks involved when undergoing a general anaesthetic can be avoided. It would seem that the majority of fractured noses will be suitable for reduction under local anaesthesia and that this procedure could-be performed in the outpatient clinic. There are

advantages in this technique in that the cost of hospital admission is avoided, the patient need make only one visit to the outpatient clinic, and time in the operating theatre may be more usefully employed. In a busy Otolaryngology Department the number of fractured noses being treated under general anaesthesia can be considerable, and so local anaesthetic reduction may provide a substantial saving in resources.

It is important to assess the technique for reduction of the fracture both objectively and subjectively, in order for the procedure to be generally accepted by patients. It is conceivable that a number of patients would refuse to undergo a procedure under local anaesthesia. In this case it is important to find out why this is so, in order that any misconceptions they have can be resolved and enable them to be reassured about the efficacy of the technique.

METHOD

All patients who had sustained nasal trauma in the preceding one week of sufficient severity to require a referral from the Accident-and-Emergency Department were seen in an outpatient clinic at the Bristol General Hospital. The clinic was staffed by a single registrar in Otolaryngology and a treatment room nurse, and was held specifically on a Friday to review the previous weeks' nasal injuries.

The extent of the nasal trauma was assessed in each case with a brief history of the incident, an examination of the nose, and a review of the radiographs taken on the day of attendance to the Accident-and-Emergency Department. Those patients with a displaced fracture of the nasal bones were offered a reduction of their fracture under local anaesthesia in the clinic at the time they were initially seen. All patients under 16 years of age were excluded from the study, and if required, a reduction of their fractured nose would be offered under general anaesthesia.

The local anaesthetic procedure involved the application of 5% cocaine, up to but not exceeding 4 ml in volume, from a standard cocaine nasal spray to both nostrils followed by infiltration over the nasal bridge with 2 ml of 2% lignocaine and 1:240,000 adrenaline solution. The local anaesthetic was directed towards the periosteum of the fractured nasal bones and the external nasal nerve. There was then a 15-min delay to allow time for the anaesthetic to achieve maximum effect. The nasal fracture was then manipulated into a midline position by direct application of digital pressure to the displaced fragment of bone. The success or failure of the procedure was noted. The patient's response to the cocaine nasal-spray application, the local anaesthetic infiltration and the manipulation were observed and recorded. No patient had a depressed nasal bone elevated by internal nasal instrumentation as they had all presented to an outpatient clinic and were expecting to go home the same afternoon. Any procedure which may have resulted in epistaxis, requiring a nasal pack and an overnight stay in hospital, was avoided.

Ofili et al. (1988) described a system for the objective assessment of patient's tolerance to local anaesthesia for inguinal hernia repair. We have similarly observed patient's reactions and graded them accordingly. It is considered likely that if a patient experiences no pain he will lie still and quiet throughout the procedure. If increasing pain is experienced the patient is likely to wince, then make movements of his limbs or trunk in order to remove himself from the source of his discomfort. If the pain level increases to an intolerable level the patient may be expected to vocalize his protest in a polite or impolite manner. These observed behaviour patterns will reflect the level of discomfort the patient experiences.

At the end of the manipulation each patient was asked to fill in a questionnaire indicating the level of discomfort experienced. The questionnaire was directed at obtaining the patient's subjective response to each step of the procedure. The level of discomfort was assessed by asking the patient to tick one of four boxes marked: (1) no discomfort; (2) mild discomfort; (3) moderate discomfort; or (4) severe discomfort, for each stage of the reduction. In order to give future patients and the general medical profession an indication of the amount of discomfort each patient underwent, we asked the patient to compare the pain level of the procedure with that of having a tooth filled - an occurrence which has probably been experienced by most of the population at some stage. We hoped to relate the level of discomfort from the procedure with a common event in order to give some reassurance to future patients about what they can expect from the manipulation.

Any patient who refused a local anaesthetic reduction of their fracture, as well as any patient whose reduction under local anaesthetic was thought to be inadequate either because of failure of the anaesthetic or severity of the fracture making manipulation difficult, had their nasal bones reduced under general anaesthesia on the next available operating list. Successful nasal reductions were discharged from the clinic with no follow-up appointment. Any patient who had either a septal deflection but no nasal fracture, a septal deflection that did not improve after manipulation of the fracture, or a manipulation of the fracture which was incomplete despite the local anaesthetic and technique being considered to be adequate, was seen again 3 months after the injury. At this visit the nose would be assessed for any evidence of q persistent structural abnormality producing symptoms which required operatiVe,surgical correction in the form of a septoplasty or a septorhinoplasty. Patients would then be placed accordingly onto a routine operations waiting list.

RESULTS

During the 5-rnonth period that the study was in progress, 111 patients were seen in the clinic. Of these, 79 were male (71%) and 32 were female (29%). The median

age of patients seen in the clinic was 22 years rnd the age range was 2 to 76 years. Twenty-two were less than 16 years of age and of these 17 were male and 5 were female. Of the patients aged over 16 years·, 62 were male (70%) and 27 were female (30%). No patient under 16 years of age received a nasal fracture that required manipulation. Fifty patients had received sufficient nasal trauma to produce displacement of their nasal bones. Fifteen patients were satisfied with the slight cosmetic deformity they had sustained and did not want any treatment for their fracture. Of these 15 patients (11 male, 4 female), 7 had a lateral displacement of their nasal bridge (6 male, 1 female) and 8 had a unilateral depression of the nasal bone (5 male, 3 female).

Thirty-five patients received treatment for their fractured nose. Of these, 30 noses were manipulated under local anaesthesia (28 male, 2 female). Five patients requested a general anaesthetic to have their fracture reduced (3 male, 2 female). Twenty-seven of the patients who received manipulation under local anaesthetic completed a questionnaire (26 male, 1 female). Three patients opted for non-participation in the study. Only the results of these 27 patients are presented.

Twenty-five of the 27 patients had a laterally displaced fracture of the nasal pyramid, 1 patient had a depressed fracture of a nasal bone, and 1 patient had a combination of lateral displacement of one nasal bone with a medial depression of the opposite nasal bone.

Table 1 shows the surgeon's impression immediately after the nasal fracture was manipulated and the final outcome of the patients in the study is shown in Table 2. Of the 19 fractures that were completely reduced, 17 had been lateral displacements of the nasal pyramid; 1 patient had an apparent unilateral depressed bone but in retrospect this was probably a mixed fracture as complete reduction was possible without elevation of the nasal bone via the intranasal route. One patient had a displaced and depressed nasal bridge fracture.

All of the 5 patients whose noses were partially reduced and the 3 patients with no reduction after manipulation, had lateral displacements of their nasal bones prior to treatment. One patient was satisfied with his incomplete reduction and did not want any further treatment. In 1 patient it was felt that the procedure of reduction was inadequate and that further improvement could be obtained under a general anaesthetic. Five patients had an incomplete reduction of their nasal architecture related to either their nasal bones, nasal septum or due to both these components. The disruption was not great enough for these patients to be listed immediately for corrective surgery and further outpatient appointments were arranged to see how they fared with regard to symptoms 3 months later. One patient obviously required correction of his nasal deformity after manipulation had failed and arrangements were made for him to have a septorhinoplasty.

Table 3 shows the observed reaction to the manipulation at each stage of the

Table 1. Results of manipulation of fracture under local anaesthesia.

	number of patients	percentage
complete reduction of fracture	19	71%
incomplete reduction of fracture:		
- partial reduction	5	18%
- no reduction	3	11%

Table 2. Outcome of manipulation under local anaesthesia.

	number of patients	percentage
discharged	20	74%
general anaesthetic reduction	1	4%
outpatient follow-up	5	18%
routine operations waiting list	1	4%.

Table 3. Observed reaction to each stage of manipulation.

patients' reaction	cocaine spray number	%	infiltration number	%	manipulation number	%
none	25	92	9	33	2	8
wince	2	8	16	59	18	66
limb/trunk/head movements	0	0	1	4	5	18
spontaneous vocal protest	0	0	1	4	2	8

Table 4. Subjective assessment by patient of manipulation under local anaesthesia.

degree of discomfort	number of patients	percentage
COCAINE SPRAY		
no discomfort	23	85
mild discomfort	3	11
moderate discomfort	1	4
severe discomfort	0	0
INFILTRATION		
no discomfort	5	18
mild discomfort	17	63
moderate discomfort	4	15
severe discomfort	1	4
MANIPULATION		
no discomfort	3	11
mild discomfort	13	48
moderate discomfort	9	33
severe discomfort	2	8

Table 5. Subjective comparison of manipulation of a nasal fracture and a tooth filling.

	number of patients	percentage
The nasal manipulation was:		
- more comfortable than a filling	10	37
- as comfortable as a filling	7	26
- mildly more uncomfortable than a filling	6	22
- moderately more uncomfortable than a filling	3	11
- severely more uncomfortable than a filling	1	4

procedure. Cocaine spray application produced no observable reaction in 92% of patients. Local anaesthetic infiltration of the nasal bridge caused 59% of patients to wince, whereas in 33% no observable reaction was detected. Nasal fracture manipulation, however, caused 66% of patients to wince, 18% to move either their limbs, trunk or head, and 8% to make vocal protest to the procedure.

Table 4 shows the subjective assessment by the patient of the individual stages of the manipulation. With each step of the procedure the level of discomfort increased but in the majority of cases it was only of a mild to moderate nature.

Table 5 gives some indication of the degree of discomfort of the local anaesthetic procedure when comparing it to a similar minor procedure, that of a dental filling. Sixty-three percent of patients found the fracture manipulation to be no worse than having a tooth filled at the dentist. When asked if they would undergo the same procedure a second time, 96% of patients said that they would.

DISCUSSION

There are two factors to consider when advocating the widespread use of local anaesthesia to reduce the displaced fractured nose. Firstly, are the results of the procedure as good as that performed under general anaesthesia? and, secondly, is the local anaesthetic technique acceptable to the patient?

The first point was initially studied by Watson et al. (1988) who showed that there was no significant difference in the functional and cosmetic appearance of the fractured nose when comparing general vs. local anaesthetic techniques. More recent studies by Waldron et al. (1989) confirm this finding, but also show there is no significant difference between general and local anaesthetic reduction in the subsequent re-operation rate for nasal obstruction and external deformity when patients are followed up over a 3-month period.

Murray and Moran (1980) have shown that 30% of fractures reduced under general anaesthesia within the first week had an unsatisfactory outcome when reviewed three months later. Immediately after local anaesthetic reduction we found a 29% failure rate of manipulation. Although these figures cannot be directly compared, we feel that in view of previous studies performed (Watson et al., 1988; Waldron et al., 1989) they are acceptable.

When treating patients with a fractured nose it is interesting to note that there is often a discrepancy between the objective and subjective assessment of the nasal appearance. What one surgeon may judge to be an anatomical deviation is not always perceived as an unacceptable result by the patient and the success or failure of the technique should not be judged on this score alone. To illustrate this point, Dickson and Sharpe (1986) reviewed 60 nasal fractures manipulated under general anaesthesia 3 months after the procedure. They found that objective surgical assessment considered only 50% of patients to have a good result from the procedure, whereas the subjective assessment by the patient showed 83% of patients to be satisfied with their nose. Perhaps this explains, in part, why 15 of the patients we saw in the clinic, did not want any treatment for the slight cosmetic deformity which they received after sustaining a nasal fracture. A review of septorhinoplasties performed by Crowther and O'Donoghue (1987) revealed that 65.5% were being performed on noses which had sustained nasal trauma but were not manipulated at the time of the injury. Only 9% of septorhinoplasties were being performed on noses which had been manipulated at the time of injury. This suggests that the majority of patients were satisfied with their nose after initial treatment of their fracture as in general they were not requesting any further surgical procedure.

The method we describe to reduce fractured noses is not the only local anaesthetic procedure available. An alternative technique has been described by El-Kholy (1989). In this case, EMLA cream (a mixture of two local anaesthetic agents, lignocaine and prilocaine) was applied to the nasal bridge to provide topical skin anaesthesia, the nasal mucosa was anaesthetized with cocaine, and the nasal fracture satisfactorily reduced. Although this method does not involve a local anaesthetic injection and could therefore be arguably more comfortable for the patient, it may be more difficult to obtain adequate analgesia when applying the cream to a nasal architecture of variable contour. The necessity of allowing 1 hour to elapse before the EMLA cream is effective, may prove to be unsatisfactory in the outpatient setting, whereas local anaesthetic infiltration allows the procedure to be performed within a quarter of the time.

It is noticeable from our results that the vast majority of nasal fractures were of one type, lateral displacements of the nasal bridge. This reflected the incidence of this type of fracture experienced in the community. Our study was undertaken in the outpatient clinic and in no instance was elevation of a depressed nasal bone attempted via the intranasal route. This was purely from a practical point of view in that epistaxis, that may have occurred as a result of elevation and the subsequent nasal pack, and overnight hospital stay would have been unacceptable to our patients as they were expecting to go home the same day. We are not able to comment on the acceptance of intranasal manipulation of a unilateral, depressed nasal-bone fracture from *our* study.

With respect to patient's acceptance of the anaesthetic technique, 63% of patients found the manipulation to be no wors than a visit to the dentist for a tooth filling. The majority of patients did not feel that the cocaine nasal spray, nor local anaesthetic infiltration, gave them any more than mild discomfort. The manipulation of the fractured nose itself produced only mild to moderate discornfort in most patients. When asked if they would undergo the same procedure a second time, if they were unfortunate enough to fracture their nose again, 96% said that they would with only 4% (1 patient) declaring that they would prefer a general anaesthetic for a second procedure.

Finally, we feel the reduction of the fractured nose under local anaesthesia is not only an adequate treatment, providing an equivalent cosmetic result to that performed under general anaesthesia, it is also an acceptable technique to the patient. Our study gives some indication that manipulation under local anaesthesia is well tolerated by the majority of patients and should be considered to be the first-line treatment of the displaced fractured nose. Its widespread use can be expected to free hospital resources for other needs. The hazards of a general anaesthetic to the patient are avoided and the whole procedure can be undertaken in the outpatient department enabling the patient to return home the same day.

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