

Routine X-rays in nasal trauma: the influence of audit on clinical practice

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Keywords: nasal trauma; X-rays; audit

Summary

The introduction of treatment protocols require audited prospective data. The use of X-rays in patients with simple nasal trauma is common but of limited value. A prospective audit of this practice and the implications of introducing a 'no X-ray' policy for these patients into the local casualty department are presented. Patients are spared radiation exposure and there are savings in patient throughput time and departmental costs. Casualty departments which have not already adopted such a policy are urged to do so. Where such a protocol is in use, audit to ensure adherence is encouraged.

Introduction

Patients who have sustained simple nasal trauma are a common source of urgent referral to otorhinolaryngological (ENT) clinics. At the Edinburgh Royal Infirmary ENT department more than 500 nasal trauma patients are seen annually. Most of these patients are referred by local accident and emergency departments and the majority have had routine nasal X-rays performed prior to referral which have frequently been requested by rotating junior casualty staff. It is recognized within ENT circles that routine nasal X-rays have a minimal role in the management of nasal fractures¹⁻⁴. An audited demonstration of the limited value of nasal X-rays in fracture management would facilitate the introduction of a fracture protocol into casualty departments. Such a protocol, based upon clinical audit rather than clinical impression, would result in a reduction in both patient radiation exposure and casualty throughput times. There would be an additional saving in casualty department running costs.

This paper details the audit conducted which allowed the instigation of such a protocol into the local casualty department.

Method

Patients referred to the ENT department with a history of uncomplicated nasal trauma were recruited prospectively into the study. Patients with suspected additional trauma to the facial skeleton, orbit or cranial contents were excluded.

The patients were examined and the degree and type of nasal injury assessed. The cause of the trauma was noted. A treatment plan was then decided, in

consultation with the patient. Any accompanying nasal X-rays were then examined and the influence of these X-rays on the management regime was determined.

At the end of the study, the role of nasal X-rays in influencing patient management was audited. In consultation with senior casualty staff the X-ray policy was then altered and X-rays were no longer taken in cases of uncomplicated nasal trauma.

A follow up study, of similar design was then performed, to ensure that the new X-ray policy had been adopted and that there were no detrimental effects on nasal fracture treatment.

Results

Seventy-five patients were included in the initial phase of the study (63 males: 12 females). The mean age was 24 years (range 12-71 years). The mechanism of injury is shown in Table 1. Sixty-seven (89%) of the patients were X-rayed prior to referral and nasal fractures were identified radiologically in 41 (61%) of these cases. All the X-rays showed the nasal bones but only 19 (25%) allowed adequate assessment of the facial skeleton. No recent additional facial or skull fractures were identified, but one old skull fracture, missed during radiological reporting, was noted. The clinical assessment, X-ray findings and subsequent management are shown in Table 2.

Patient management was determined purely on the basis of clinical examination and discussion with the patient in all cases. In no case did the presence, or absence, of a nasal fracture seen on X-ray alter the treatment protocol.

The follow-up study, conducted after routine nasal X-raying was stopped, recruited an additional 50 patients. Only three patients had been X-rayed prior to referral. The absence of X-rays in this follow up study did not alter the management which was similar in the two groups.

Discussion

It is routine practice to investigate patients with suspected fractures radiologically. This mode of

Table 1. Mechanism of nasal injury

Mechanism	No. (n=75)
Assault	36
Sport	20
Fall	10
Road traffic accident	5
Other	4

Table 2. A comparison of clinical findings, radiology and management in patients with uncomplicated nasal trauma

Clinical assessment	Radiology	Management				
		Nil	MUA	SRP	SS	Other
Displacement of nasal bones only (n=26)	Fracture	—	12	1	—	—
	No fracture	4	6	—	—	—
	No X-ray	—	3	—	—	—
Displacement±nasal obstruction±Septal injury (n=33)	Fracture	6	7	5	2	—
	No fracture	—	3	3	2	1
	No X-ray	—	1	1	1	1
No abnormality (n=16)	Fracture	8	—	—	—	—
	No fracture	7	—	—	—	—
	No X-ray	1	—	—	—	—
Total		26	32	10	5	2

MUA=Manipulation under anaesthetic; SRP=septorhinoplasty; SS=septal surgery

thinking frequently pertains when a simple nasal fracture is suspected. This may reflect restricted ENT exposure received, as a medical student, by junior casualty staff. However, decisions regarding the management of nasal fractures are based primarily on clinical examination and the patient's desire to have the structure and/or function of the nose restored. This audit confirmed routine X-rays are unnecessary in simple nasal trauma as they do not alter management. This finding is restricted to patients who have not suffered additional injuries to the head or facial skeleton.

The large male preponderance in this series reflects the high incidence of assault and it is frequently argued that nasal X-rays are taken for 'medicolegal' purposes without defining exactly what is meant by this^{5,6}. Discussion with our local authority health board legal department shows that such X-rays are not required if it can be argued that a substantial body of medical opinion supports this view. Such a body of opinion exists in ENT¹⁻⁴.

It is pertinent to consider the financial consequences of not taking these X-rays. Given that around 500 such patients present annually in the Lothian region, a conservative estimate of the cost would be in the region of £4000. These patients often present out of hours and place an additional burden on the casualty radiological staff. Radiologists reporting time will be shortened without this unnecessary commitment and the radiation dose to such patients will be abolished⁷.

The results of this audit were discussed with casualty staff and it is now policy not to routinely X-ray the nasal bones in cases of uncomplicated nasal trauma. The audit cycle has, therefore, been completed⁸. We have compared our practice to current standards, the deficiencies revealed have been

corrected by a policy change and subsequent review showed patient service to have improved.

The discovery that these X-rays were taken regularly, before this audit, may surprise many senior ENT and casualty practitioners. However, simple nasal trauma is usually seen and managed by training grade doctors and, consequently, the practice of nasal X-raying may not be recognized by senior colleagues. All departments dealing with nasal trauma should ensure that the practice of requesting nasal X-rays in cases of uncomplicated trauma does not occur.

References

- 1 Illum P. Legal aspects in nasal fractures. *Rhinology* 1991;29:263-6
- 2 De Lacey GJ, Wignall BK, Hussein S, Reidy JR. The radiology of nasal injuries: problems of interpretation and clinical relevance. *Radiology* 1977;50:412-14
- 3 Clayton MI, Lesser THJ. The role of radiology in the management of nasal fractures. *J Laryngol Otol* 1986; 100:797-801
- 4 Maxel M. Nasal fractures, their occurrence, management and some late results. *J R Coll Surg Edinb* 1973;18:31-6
- 5 Wexler MR. Reconstructive surgery of the injured nose. *Otolaryngol Clinics N Am* 1975;8:663-77
- 6 Altreuter RW. Facial form and function: films versus physical examinations. *Ann Emergency Med* 1986; 15:240-4
- 7 Paukku P, Gothlin J, Totterman S, Servomaa A, Hallikainen D. Radiation doses during panoramic zonography and plain film radiology of the maxillo-facial skeleton. *Eur J Radiol* 1983;3:239-41
- 8 Royal College of Physicians. Medical Audit: A First Report - What, Why, and How? London: Royal College of Physicians, 1989

(Accepted 12 July 1993)