Single view radiographic screening of midfacial trauma

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Record Status

This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology

Radiographic screening of midfacial trauma.

Type of intervention

Screening; diagnosis.

Economic study type

Cost-effectiveness analysis.

Study population

Patients with mid-facial injuries requiring radiographic investigation.

Setting

The practice setting was a United Kingdom Accident & Emergency (A&E) Department. The economic analysis was undertaken within the UK.

Dates to which data relate

Effectiveness data were collected between 1 May 1996 to 30 Apr 1997 for the intervention and in the period 1995-1996 for the comparator. Resource data appear to have been collected over the same period. No price year was stated.

Source of effectiveness data

Effectiveness data were derived from a single study.

Link between effectiveness and cost data

Prospective costing was undertaken on the radiographic midfacial screening effectiveness study sample.

Study sample

All patients with midfacial injuries requiring radiographic investigation, and attending the relevant department, were made available for study inclusion. 3 treatment options were made available: no treatment, refer for further views, or refer for maxillofacial surgical opinion. Patients with severe midfacial and craniofacial trauma were excluded from the study. 621 patients were screened in total with full data available for 601 clients. These later clients had 613 radiographs taken in total. 130 patients were referred to the maxillofacial team for an opinion. No power calculations were reported in the determination of the study sample size.

Study design
This was a before-and-after study using different case-series. The period of follow-up was until confirmation of diagnosis. Due to the study design, no loss to follow-up occurred.

Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only. Primary health outcomes were the number of maxillofacial-referred clients with midfacial fractures.

Effectiveness results
36 of the maxillofacial-referred patients had midfacial fractures (27.7%). 2 fractures were missed by the A&E Department but were later found to be clinically insignificant. Only eight patients required further views to confirm diagnosis.

Clinical conclusions
Throughout this treatment method there were no increased numbers of referrals to the maxillofacial team. Reduced radiographic exposure is part of good clinical practice especially concerning radiation exposure to patient eyes.

Measure of benefits used in the economic analysis
Benefits were expressed in term of the reduced number of films used through the midfacial screening process and the referral rate to the maxillofacial team.

Direct costs
Direct costs centred on film costs (radiographer time costs were mentioned but not costed). A price year was not given but would have been required due to the extended period over which costs were gathered. The cost perspective appears to have been that of the UK National Health Service.

Statistical analysis of costs
Not undertaken.

Currency
UK pounds sterling ().

Sensitivity analysis
Not performed.

Estimated benefits used in the economic analysis
The intervention resulted in a reduction of 1,190 films with the intervention compared with the period of comparison (a 66% reduction). No increase in the referral rate to the maxillofacial team occurred.

Cost results
Cost savings from reduced film usage were found to total 2,082.50.

Synthesis of costs and benefits
Not performed.

Authors' conclusions
Extrapolated to the UK, there would be cost savings of around 500,000 through implementing a single-view radiographic screening policy for midfacial injuries. The authors would not recommend this policy for patients suffering from multiple injuries and severe or midfacial trauma, as such patients may have cervical spinal injuries, which would be aggravated by OM positioning (CT scans are recommended).

CRD COMMENTARY - Selection of comparators
The selection of the comparator, 3-view screening, was clearly justified within this study.

Validity of estimate of measure of benefit
Benefits were expressed in terms of reduced costing through a reduction in films (and therefore exposure to radiation). However, the study design adopted (before and after), whilst being appropriate, introduced some potential biases around patient characteristics in the two periods (comparability is not verifiable in this study) which may have influenced the results.

Validity of estimate of costs
Not all relevant direct costs were included within the analysis (radiographer time, missed appointments, etc.). No statistical or sensitivity analyses were performed. These features tend to limit the internal and external validity of the results.

Other issues
Although the results are a useful contribution to the study question, the lack of power calculations around sample size, full economic analysis (including sensitivity analysis to test the results under different circumstances), and lack of socio-demographic information around client profiles weaken the findings and recommendations of this study. A more robust methodology with (details of) a higher degree of reliability (for example a randomised, experimental design) would strengthen the results and recommendations made.

Implications of the study
The results suggest that single-view radiographic screening of midfacial injuries in A&E attenders maintains high diagnostic efficiency and reduces radiation exposure whilst achieving economic benefits. However, it would be preferable to validate these findings within the context of a more rigorous experimental study using concurrent samples.

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