Closure of hip wound, clips or subcuticular sutures: does it make a difference?

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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
The use of clips versus subcuticular sutures for the closure of hip wounds.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients with a fractured neck of the femur. Two types of hip surgery were considered, dynamic hip screw (DHS) and arthroplasty.

Setting
The setting was a hospital. The economic study was carried out in the UK.

Dates to which data relate
The effectiveness and resource use data were gathered from September 2001 to March 2002. The price year was not reported.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing appears to have been carried out prospectively on the same sample of patients as that included in the analysis of effectiveness.

Study sample
Power calculations were not performed. Eligible patients were identified at the authors' institution over the study period. The study sample comprised 71 patients. There were 41 patients (34 women) in the clips group and 30 patients (24 women) in the subcuticular group. The mean age of the patients was 85.4 years (age range: 67 to 100) in the clips group and 82 years (age range: 69 to 91) in the subcuticular group. The numbers of patients undergoing DHS were 24 (clips group) and 13 (subcuticular group), respectively. The remaining patients (17 in each group) underwent arthroplasty.
Study design
This was a prospective cohort study that appears to have been carried out at the authors' institution. The patients were visited at days 2, 5, 7, 10 and 14 after surgery. No patient was lost to the follow-up assessment. Blinding was not performed. Six experienced surgeons performed all interventions. The clips were removed at 10 days using a special instrument.

Analysis of effectiveness
All patients included in the initial study sample were considered in the analysis of effectiveness. The primary outcome measures were postoperative day of wound discharge, use of dressing, signs of inflammation, redness, infection and wound healing. Wound discharge was classified as mild, moderate or severe depending on the amount and frequency of dressing changes. Redness was classified as absent or present. The study groups were comparable at baseline in terms of the clinical characteristics, demographics and presence of co-morbidities.

Effectiveness results
The number of patients discharged was:

16 in the clips group and 5 in the subcuticular group on day 2,
23 in the clips group and 8 in the subcuticular group on day 5,
22 in the clips group and 2 in the subcuticular group on day 7,
15 in the clips group and 0 in the subcuticular group on day 10, and
10 in the clips group and 0 in the subcuticular group on day 14, (p<0.002).

For the sub-group of patients undergoing DHS, the numbers of patients discharged in the clips and subcuticular groups were, respectively:

10 and 3 on day 2,
13 and 4 on day 5,
13 and 1 on day 7,
9 and 0 on day 10, and
6 and 0 on day 14, (p<0.001).

For the sub-group of patients undergoing arthroplasty, the numbers of patients discharged in the clips and subcuticular groups were, respectively:

6 and 1 on day 2,
10 and 3 on day 5,
9 and 1 on day 7,
6 and 0 on day 10, and
4 and 0 on day 14, (p<0.003).

Dressing changes were needed less frequently in the subcuticular group (mean 3, range: 2 to 6) than in the clips group (mean 5, range: 4 to 10).
Signs of inflammation in the clips group were noted in 8 patients at day 2, in 18 patients at day 5, in 29 patients at day 10, in 19 patients at day 14, and in none of the patients by day 21. For the subcuticular group, such signs were noted in no patients on day 2, in 4 patients on days 5 and 7, in 3 patients on day 10, and in no patients on day 14. The differences between the groups were statistically significant.

Patients in the clips group had a statistically higher incidence of wound redness in comparison with patients in the subcuticular group.

There were three cases of infections, all of which were observed in the clips group. There were two incidences of some initial wound gaping on day 2 in the clips group, but the wound had healed satisfactorily by day 10. Wound margin was inadequately apposed in the majority of patients in the clips group (inadequate wound healing).

Clinical conclusions
The effectiveness analysis showed that better outcomes were observed amongst patients in the subcuticular group than amongst those in the clips group.

Measure of benefits used in the economic analysis
The health outcomes were left disaggregated and no summary benefit measure was used in the economic analysis. In effect, a cost-consequences analysis was carried out.

Direct costs
The perspective adopted in the cost analysis was not explicitly reported. The costs considered were for application, remover and dressing. The costs associated with skin closure were negligible in comparison with the total theatre cost, thus these costs were not included. The unit costs were not reported separately from the quantities of resources used. Resource use was estimated from the sample of patients included in the effectiveness study. The source of the costs was not explicitly stated. Discounting was not relevant as the costs were incurred during a short timeframe. The price year was not reported.

Statistical analysis of costs
No statistical analyses of the costs were performed.

Indirect Costs
The indirect costs were not included in the economic evaluation.

Currency
UK pounds sterling (). 

Sensitivity analysis
Sensitivity analyses were not carried out.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The total costs per patient were 18.10 in the clips group and 5.00 in the subcuticular group.
When considering the 75,000 operations performed every year, the total costs per year would be 1,357,500 in the clips group and 375,000 in the subcuticular group.

**Synthesis of costs and benefits**
A synthesis of the costs and benefits was not relevant as a cost-consequences analysis was carried out.

**Authors' conclusions**
For wound closure following hip surgery, subcuticular vicryl sutures were significantly better than clips in terms of wound healing and costs.

**CRD COMMENTARY - Selection of comparators**
The rationale for the selection of the comparators was clear. You should decide whether clips and subcuticular sutures are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**
The effectiveness came from a cohort study. The lack of random allocation of patients to the study groups represents a limitation of the analysis and the method used to allocate the patients was not reported. Consequently, the potential impact of selection bias cannot be ruled out. Few details on the approach used to assess the clinical outcomes were reported. The study groups were comparable at baseline. The evidence appears to have come from a single centre, which might limit the representativeness of the patient sample. No formal justification for the size of the sample was provided: power calculations were not reported and a small sample of patients was recruited. These issues tend to limit the internal validity of the analysis.

**Validity of estimate of measure of benefit**
No summary benefit measure was used in the analysis because a cost-consequences analysis was conducted. Please refer to the comments in the 'Validity of estimate of measure of effectiveness' field (above).

**Validity of estimate of costs**
The cost analysis was restricted to the cost of the suture. Other resources associated with different aspects of treatment were not included since they might have been similar between the two strategies under examination. Details of the unit costs, quantities of resources used, price year and source of the costs were not reported clearly. This may limit the possibility of replicating the analysis in other time periods and other settings. The authors did not carry out statistical analyses of the costs, and the cost estimates were specific to the study setting.

**Other issues**
The authors discussed the results from other studies, which were implicitly compared with their findings. The issue of the generalisability of the study results to other settings was not addressed and sensitivity analyses were not performed, which may reduce the external validity of the analysis. The study referred to patients undergoing hip surgery and this was reflected in the authors’ conclusions.

**Implications of the study**
The study results support the use of subcuticular vicryl for wound closure after hip surgery. The authors suggest that future studies should be based on a clinical trial if firmer conclusions are to be drawn.

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Other publications of related interest
Graham DA, Jeffery JA, Bain D, et al. Staple vs. subcuticular vicryl closure in knee replacement surgery: a spectro-


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