Oral oxycodone hydrochloride versus epidural anaesthesia for pain control after radical retropubic prostatectomy

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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 study examined two peri- and postoperative anaesthetic treatments for patients undergoing radical retropubic prostatectomy (RRP). The first treatment consisted of epidural anaesthesia (EDA) with ropivacaine (2 mg/mL; 4 to 12 mL/hour), paracetamol (4 x 1 tablet) plus injected or oral morphine on demand. The second treatment consisted of infiltration of 0.25% bupivacaine (25 to 40 mL) into the wound perioperatively plus oxycodone hydrochloride (OXY) (2 x 10-mg tablets), paracetamol (4 x 1 tablet) and injected or oral morphine on demand.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients undergoing RRP.

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

Dates to which data relate
The dates during which the effectiveness and resource use data were gathered was not reported. The price year appears to have been 2005.

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

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that used in the effectiveness analysis.

Study sample
Power calculations, if performed, were not reported. A sample of 41 consecutive patients was initially contacted, but one patient refused to participate. Thus, 40 patients (20 in each group) participated. The mean age was 62.6 years (range: 53 to 71) in the EDA group and 64.0 years (range: 50 to 73) in the OXY group. The mean prostate-specific antigen (PSA) level was 9.0 (range: 0.97 to 24) in the EDA group and 12 (range: 3.1 to 28) in the OXY group.
Study design
This was a prospective, randomised clinical trial that was carried out at a single institution, the Karolinska University Hospital in Stockholm, Sweden. Randomisation was based on sealed envelopes containing a piece of paper with either OXY or EDA written on it. The patients were contacted 14 days after the operation. No patient was lost to follow-up. Blinding was not performed.

Analysis of effectiveness
The analysis of the clinical study was conducted on an intention to treat basis since all patients included in the study sample were taken into account. The primary outcome measures were postoperative pain, time to free mobilisation, duration of hospital stay, and postoperative vomiting and constipation. Postoperative pain was measured using a visual analogue scale (VAS) ranging from 0 (no pain) to 10 (the worst imaginable pain). Other clinical end points were operation time, perioperative bleeding, time for regaining consciousness and complications. The study groups were comparable at baseline in terms of the patients' age, PSA levels and Gleason score.

Effectiveness results
VAS scores were acceptable (below 4) during the operation and during hospital stay in both groups.

The EDA group experienced slightly less pain than the OXY group on the operation day, but this difference was not statistically significant. The median VAS scores were 0.7 and 1.8, (p=0.27).

The median VAS scores during hospital stay were 1.7 in both groups.

The VAS scores ranged from 0.1 to 3.3 in the EDA group and from 0.2 to 3.5 in the OXY group.

The median cumulative VAS score during hospital stay was 6.5 (range: 0.5 to 16) in the EDA group and 8.8 (range: 0.5 to 21) in the OXY group, (p=0.48).

Thirty per cent of patients in the EDA group and 60% in the OXY group achieved free mobilisation in the first postoperative day, while 70% in the EDA group and 40% in the OXY group achieved free mobilisation in the second or third postoperative day, (p not significant).

No statistically significant differences between groups were observed in terms of the operation time, perioperative bleeding or time for regaining consciousness. The median length of follow-up was 3 nights (range: 2 to 6) in the EDA group and 3 nights (range: 3 to 9) in the OXY group, but the difference did not reach statistical significance. Postoperative vomiting and constipation were also comparable between groups.

Complications were observed in 16 patients in the EDA group and 1 patient in the OXY group. The most common complications in EDA patients were loss of sensor function in legs and hypotension.

Clinical conclusions
The effectiveness analysis showed that the two treatments were comparable in terms of their efficacy and safety, although fewer complications were observed in OXY patients.

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 viewpoint of the analysis was unclear and only the direct medical costs associated with analgesia were included in the analysis. Specifically, the analysis considered the costs of drugs, materials and personnel. The unit costs and the quantities of resources used were not presented separately. Resource consumption was based on data derived from the
sample of patients included in the clinical trial. The source of the data was not explicitly stated, but it might have been the authors’ institution. Discounting was not relevant as the costs were incurred during a short timeframe. The price year was not stated but it might have been 2005.

**Statistical analysis of costs**
The costs were treated deterministically.

**Indirect Costs**
The indirect costs were not considered.

**Currency**
Euros (EUR). The costs were converted from Swedish kroner to EUR at the exchange rate prevailing in April 2005.

**Sensitivity analysis**
Sensitivity analyses were not carried out.

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

**Cost results**
The costs of analgesia per patient were EUR 49.64 in the EDA group and EUR 9.08 in the OXY group.

When personnel and material costs were included, the total costs per patient were EUR 121.44 in the EDA group and EUR 9.08 in the OXY 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**
Satisfactory analgesia was achieved with oxycodone (OXY) in tablet form as well as with epidural anaesthesia (EDA) in patients undergoing radical retropubic prostatectomy (RRP) in Sweden. However, EDA led to a longer time to mobilisation in comparison with OXY and resulted in more complications which, although mild, caused discomfort to the patients and required extra workload. The total costs associated with analgesia were higher in EDA patients than in OXY patients.

**CRD COMMENTARY - Selection of comparators**
A clear justification for the choice of the comparators was provided. EDA was the conventional anaesthetic approach at the authors’ institution, while OXY was the alternative treatment. Drug dosages and patterns of administration were clearly described. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**
The effectiveness evidence came from a randomised clinical trial, which was appropriate for the study question. The method of randomisation was described and should have reduced the impact of selection bias. Some information about the approach used to select the sample of participating patients was also reported. The authors stated that one patient refused to participate because he did not want to receive EDA. The baseline comparability of the study groups enhances
the robustness of the comparison. A further strength of the study was the intention to treat basis for the analysis of effectiveness. However, the trial was open-label, thus assessment bias might have affected the results of the study. Further, the sample size was not determined by power calculations and this might explain the lack of statistically significant differences between groups in all outcome measures, owing to the small group of patients included. Statistical analyses were carried out to test the significance of differences between the groups. The length of follow-up was appropriate although short. The evidence came from a single centre, thus caution will be required if extrapolating the results of the analysis to other settings. These issues might limit the internal and external 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 those costs associated with the administration of analgesia. A breakdown of the cost items was provided, but information on the unit costs and quantities of resources used was not presented. The source of the costs was not explicitly reported. No statistical analyses of the costs were performed and the cost estimates were specific to the study setting. No sensitivity analyses were carried out. The period during which data on resource consumption were gathered was not stated, but the price year was implicitly reported, which may help in conducting reflation exercises in other time periods.

**Other issues**

The authors did not make extensive comparisons of their findings with those from other studies, although they stated that some of the clinical results were consistent with other published data. The issue of the generalisability of the study results to other settings was not addressed and sensitivity analyses were not carried out, which limits the external validity of the study results. The analysis referred to patients undergoing RRP and this was reflected in the authors’ conclusions. The results of the analysis were clearly and extensively reported.

**Implications of the study**

The authors recommended the use of tablet OXY for pain control in patients undergoing RRP.

**Source of funding**

None stated.

**Bibliographic details**


**PubMedID**

16809258

**DOI**

10.1080/00365590600589583

**Other publications of related interest**

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Indexing Status
Subject indexing assigned by NLM

MeSH
Acetaminophen /administration & dosage /therapeutic use; Administration, Oral; Aged; Amides /administration & dosage /adverse effects /therapeutic use; Analgesia, Patient-Controlled; Analgesics, Non-Narcotic /administration & dosage /therapeutic use; Analgesics, Opioid /administration & dosage /therapeutic use; Anesthesia, Epidural /adverse effects; Anesthetics, Local /administration & dosage /therapeutic use; Bupivacaine /administration & dosage /therapeutic use; Drug Therapy, Combination; Early Ambulation; Humans; Male; Middle Aged; Morphine /administration & dosage /therapeutic use; Oxycodone /administration & dosage /therapeutic use; Pain Measurement; Pain, Postoperative /drug therapy; Prostatectomy; Sufentanil /administration & dosage /therapeutic use

AccessionNumber
22006001015

Date bibliographic record published
31/03/2007

Date abstract record published
31/03/2007