Right radial access (RRA) for PTCA: a prospective study demonstrates reduced complications and hospital charges
Mann J T, Cubeddu G, Schneider J E, Arrowood M

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
Right Radial Access (RRA) for Percutaneous Transluminal Coronary Angioplasty (PTCA).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing PTCA. All patients undergoing angioplasty from the radial artery approach had a normal Allen test and Doppler exam, prior to the procedure, documenting normal ulnar flow with complete palmar arch.

Setting
Hospital. The economic study was carried out in Raleigh, North Carolina, USA.

Dates to which data relate
The main effectiveness data were extracted from a clinical trial conducted in 1994-95. Resource and cost data were mainly derived from 1994-95 sources. The price year was not stated.

Source of effectiveness data
Estimates of the lesions dilated, primary success, stents, emergency bypass, deaths, total PTCA time, fluoroscopy time, access-site complications, post-PTCA length of stay, and total hospital length of stay were derived from a single randomized study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the economic study.

Study sample
The study sample were a cohort of 152 patient undergoing PTCA. Patients were divided into two groups: patients who underwent PTCA from right radial artery (RRA) (n=73, 73% male, mean age 63.8) and patients who underwent PTCA from right femoral artery (RFA) (n=75, 69% male, mean age 61.5). Power calculations to determine the sample size were not given.
Study design
The study was a randomized controlled trial. Doppler follow-up was performed in 63 patients out of 73 in the RRA group. The loss to follow-up was four patients: 3 in the radial group (one patient had a negative Allen test and two patients had unsuccessful cannulation due to intense radial artery spasm) and 1 in the femoral group (excluded due to a large groin haematoma following diagnostic catheterization).

Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only. The primary health outcomes used in the analysis were estimates of the lesions dilated, primary success, stents, emergency bypass, deaths, total PTCA time, fluoroscopy time, access-site complications, post-PTCA length of stay, and total hospital length of stay.

Effectiveness results
The lesions dilated were estimated to be 109 and 110 in the RRA and RFA groups, respectively. The primary success was estimated to be 95% in the RRA group and 97% in the RFA group. The stents were estimated to be 5% in the RRA group and 7% in the group. Emergency bypass was estimated to be performed in 1 and 9 patients in the RRA and RFA groups, respectively. No deaths occurred in either group. The total PTCA time was estimated to be 38.1 (+/- 2.9) minutes and 35.8 (+/- 2.2) minutes in the RRA and RFA group, respectively. The fluoroscopy time was estimated to be 13.4 (+/- 1.3) minutes in the RRA group and 12.1 (+/- 1.2) minutes in the RFA group. The access-site complications were estimated to be 4 in the RFA group (p<0.04) and 0 in the RRA group. The post-PTCA length of stay was estimated to be 2.1 (+/- 0.1) days and 2.6 (+/- 0.3) days in the respective groups. The total hospital length of stay was estimated to be 3.6 (+/- 0.2) days in the RRA group and 4.5 (+/- 0.4) days in the RFA group. (p<0.03).

Clinical conclusions
When comparing RRA with RFA, access-site complications are virtually eliminated and early ambulation may result in a shortened hospital stay in the RRA technique.

Measure of benefits used in the economic analysis
No summary benefit measure was developed, therefore the benefits are assumed to be equal to the effectiveness results.

Direct costs
Cath lab charges, post-PTCA length of stay, total hospital length of stay and total hospital charge were included in the analysis. Quantities were analysed separately from prices. Discounting was not undertaken because of the short period of the study. The quantity/cost boundary adopted was the hospital. The price date was not stated.

Statistical analysis of costs
Z test and p values.

Indirect Costs
Not included.

Currency
US dollars ($).

Sensitivity analysis
Not stated.
Estimated benefits used in the economic analysis
See effectiveness results section above.

Cost results
The total hospital charge was estimated to be $14,374 (+/- 467) and 15,796 (+/- 702) in the RRA and RFA group, respectively, (p<0.05).

Synthesis of costs and benefits
A synthesis of the estimated benefits and costs was not undertaken since, in terms of the outcomes assessed, the intervention was equally effective or dominant. An incremental analysis was not performed.

Authors' conclusions
PTCA can be performed from RRA as effectively as RFA without clinically significant access-site complications. Both post-procedure and total hospital stay are reduced, leading to a 9% reduction in total hospital charges.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear. Angioplasty can safely and effectively be performed using either RRA or RFA with a virtual absence of access-site complications.

Validity of estimate of measure of benefit
The estimate of measure of benefit used in the economic analysis is likely to be internally valid. The authors noted, however, that certain bailout devices cannot be used in RRA procedures. Even though this did not present as a difficulty in this study, in practice settings it may affect the consistency of the present findings. The long term sequelae of radial artery occlusions, a potential side-effect of RRA, are not known. The data have not been used selectively to evaluate the hypothesis that angioplasty by means of RRA is more cost effective than that conducted by means of RFA.

Validity of estimate of costs
Adequate details of the methods of quantity/cost estimation were given. Important cost items do not appear to have been omitted.

Other issues
The authors' conclusions are likely to be justified, given the uncertainties in the data. The issue of generalisability to other countries was addressed and appropriate comparisons were made with other studies.

Source of funding
None stated.

Bibliographic details

Indexing Status
Subject indexing assigned by NLM

MeSH
Angina, Unstable /therapy; Angioplasty, Transluminal, Percutaneous Coronary /instrumentation; Comparative Study; Female; Hemorrhage /chemically induced /prevention & control; Humans; Male; Middle Aged; Myocardial Infarction /therapy; Radial Artery; Risk Factors; Stents; Treatment Outcome

AccessionNumber
21996001014

Date bibliographic record published
30/04/1999

Date abstract record published
30/04/1999