Percutaneous fixation with Kirschner wires versus volar locking plate fixation in adults with dorsally displaced fracture of distal radius: randomised controlled trial

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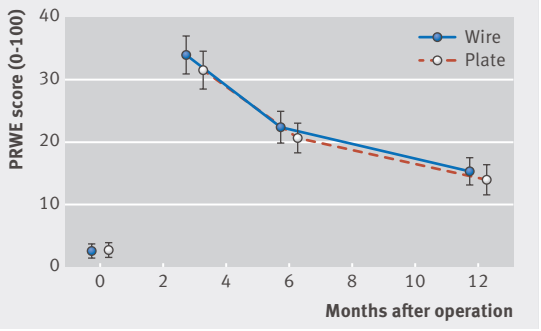
STUDY QUESTION Is there a difference in the clinical effectiveness of Kirschner wire fixation versus locking plate fixation for patients with a dorsally displaced fracture of the distal radius?

SUMMARY ANSWER There was no clinically relevant difference between Kirschner wire fixation and locking plate fixation at any time point in the first year after the fracture.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS Locking plate fixation is increasingly being used for fixation of fractures of the distal radius. This trial shows that there is no difference in functional outcome between Kirschner wires and volar locking plates for patients with such fractures.

Trends in mean wrist function scores after fracture



Design

A multicentre two arm parallel group assessor blind randomised controlled trial

Participants and setting

461 adult patients with a dorsally displaced fracture of the distal radius requiring surgical fixation were recruited from 18 trauma units in the United Kingdom. Patients were excluded if the surgeon thought that the surface of the wrist joint was so badly displaced that it required open reduction.

Primary outcome

The primary outcome measure was the validated patient rated wrist evaluation (PRWE) score. Secondary outcomes were the disabilities of arm, shoulder, and hand (DASH) score, the EuroQol (EQ-5D), and complications related to the surgery.

Main results and the role of chance

The baseline characteristics of the two groups were well balanced, and over 90% of patients completed follow-up. The wrist function of both groups of patients improved by 12 months. There was no clinically relevant difference in the wrist evaluation score at three, six, or 12 months (difference −1.3 in favour of the plate group, 95% confidence interval −4.5 to 1.8; P=0.398). There was no clinically relevant difference in patients aged ≥50 versus those aged <50, and no difference in those patients with intra-articular injuries versus those with extra-articular injuries. Nor was there a clinically relevant difference in health related quality of life.

Harms

The complications related to each procedure were slightly different: there were more superficial wound complications in the Kirschner wire group and more nerve injuries in the locking plate group. However, there was no difference in the overall number of complications in each group. Five patients in the wire group and two in the plate group required revision surgery for loss of reduction. Nine patients in the plate group required removal of symptomatic metalwork (four for screw penetration of the joint) and one patient required removal of a "buried" wire.

Bias, confounding, and other reasons for caution

Neither the patients nor the surgeons could be blind to the treatment allocation in this surgical trial.

Generalisability to other populations

This trial was conducted in a broad range of NHS hospitals and involved a large number of surgeons, both specialist hand surgeons and general trauma surgeons, with various levels of experience. The pragmatic approach used with regard to operative techniques and implants suggests that the results can be applied generally, both nationally and internationally. As we excluded patients in whom the surface of the wrist (radiocarpal) joint could not be reduced by indirect means, the results should not be generalised to the small minority of patients whose fracture requires the surgeon to open the joint surface to expose the individual bone fragments to restore the congruity of the wrist joint.

Study funding/potential competing interests

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The list of members of the DRAFFT Study Group is with the full paper on thebmj.com.

Trial registration

ISCRTN 31379280. UKCRN 8956.

Associations between active commuting, body fat, and body mass index: population based, cross sectional study in the United Kingdom

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EDITORIAL by Henderson and colleagues

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- Research: Bicycle weight and commuting time: randomised trial (*BMJ* 2010;341:c6801)
- News: Active commuting is important in raising exercise levels (*BMJ* 2006;332:1352)
- Research: Promoting walking and cycling as an alternative to using cars: systematic review (*BMJ* 2004;329:763)

STUDY QUESTION

Is active commuting independently associated with objectively assessed biological markers of obesity?

SUMMARY ANSWER

Individuals who commuted to work by active (walking or cycling) and public modes of transport had significantly lower body mass index and percentage body fat than people who used private transport. These associations were not attenuated by adjustment for a range of potential confounding factors.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS

Studies have generally suggested that active commuters have a lower risk of self reported overweight.
This study used objectively measured body mass index and percentage body fat outcomes.
This study also considers public transport as a potential form of active travel in addition to walking and cycling.

Design

Cross sectional data from the wave 2 health assessment subsample of the United Kingdom Household Longitudinal Study (UKHLS) were used.

Participants and setting

The analytic samples (7534 individuals for the body mass index analysis, 7424 for the percentage body fat analysis) were drawn from the representative subsample of wave 2 respondents of UKHLS who provided health assessment data (n=15 777).

Primary outcomes

Two objectively assessed outcomes were investigated: body mass index (weight (kg)/height (m)^2) and percentage body fat (measured by electrical impedance).

Main results and the role of chance

Results from multivariate linear regression analyses suggest that, compared with using private transport, commuting by public or active transport modes was significantly and independently predictive of lower body mass index for both men and women. In fully adjusted models, men who commuted via public or active modes had body mass index scores 1.10 (95% CI 0.53 to 1.67) and 0.97 (0.40 to 1.55) points lower, respectively, than those who used private transport. Women who commuted via public or active modes had body mass index scores 0.72 (0.06 to 1.37) and 0.87 (0.36 to 0.87) points lower, respectively, than women using private transport. Results for percentage body fat were similar in terms of magnitude, significance, and direction of effects.

Bias, confounding and other reasons for caution

While a range of demographic, socioeconomic, physical activity, diet, and health related covariates were adjusted for in the models, residual confounding may still be in operation. UKHLS participants were asked only to give their main commuting mode, meaning that mixed mode journeys were not captured. UKHLS health assessment data are currently available for only one time point, and so direction of causality cannot be inferred from these findings.

Generalisability to other populations

The UKHLS is respresentative of the general population of the UK. These results may be generalisable to other developed countries with high levels of car use.

Study funding/potential competing interests

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Results of sex stratified series of linear regression models investigating the association between commuting mode and body mass index and percentage body fat. Values are difference (95% confidence interval)

	Men (n=3409)		Women (n=4125)	
Variables	Unadjusted difference	Fully adjusted difference†	Unadjusted difference	Fully adjusted difference†
Body mass index				
Private transport	0	0	0	0
Public transport	−1.43 (−2.01 to −0.84)**	−1.10 (−1.67 to −0.53)**	−0.94 (−1.62 to −0.26)*	−0.72 (−1.37 to −0.06)*
Active transport	−1.41 (−1.97 to −0.85)**	−0.97 (−1.55 to −0.40)*	−0.86 (−1.35 to −0.36)*	−0.87 (−1.37 to −0.36)*
Percentage body fat				
Private transport	0	0	0	0
Public transport	−2.42 (−3.60 to −1.23)**	−1.48 (−2.65 to −0.32)*	−1.97 (−3.08 to −0.87)**	−1.46 (−2.48 to −0.43)*
Active transport	−2.22 (−3.30 to −1.14)**	−1.35 (−2.41 to −0.29)*	−1.39 (−2.22 to −0.56)*	−1.37 (−2.17 to −0.57)*

*P≤0.05, **P<0.001.
†Adjusted for age, limiting illness or disability, equivalised monthly household income, occupational social class, occupational physical activity, sports participation, diet quality (vegetable consumption), urban or rural residential classification.

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Use of clarithromycin and roxithromycin and risk of cardiac death: cohort study

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Research: Cardiovascular events after clarithromycin use in lower respiratory tract infections (*BMJ* 2013;346:f1235)

STUDY QUESTION

Is use of the macrolide antibiotics clarithromycin and roxithromycin associated with increased risk of cardiac death compared with penicillin V?

SUMMARY ANSWER

This nationwide cohort study found a significantly increased risk of cardiac death associated with current use of clarithromycin, but not roxithromycin.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS

Macrolide antibiotics prolong the QT interval and are therefore thought to increase the risk of potentially fatal arrhythmias. This register based cohort study found a significantly increased risk of cardiac death associated with current use of clarithromycin, which was most pronounced among women; no increased risk of cardiac death was found with roxithromycin.

Participants and setting

We studied users of clarithromycin, roxithromycin, and penicillin V in Denmark, 1997-2011.

Design, size, and duration

We did a prospective study in a historic cohort of users of clarithromycin, roxithromycin, and penicillin V. The study outcome was cardiac death. Data on dispensed drug prescriptions, outcomes, and potential confounders came from nationwide registries. We considered each prescription for the study antibiotics to be a separate event, and each participant could contribute multiple prescriptions to the study. To account for differences in the baseline risk of cardiac death, we adjusted all analyses for propensity scores. We estimated rate ratios by using Poisson regression, comparing individual macrolides with penicillin V during time periods of current use (0-7 days from start of treatment) and past use (8-37 days). We did subgroup analyses according to sex, age, risk score, and concomitant use of drugs that inhibit the cytochrome P450 3A enzyme, which metabolises macrolides.

Main results and the role of chance

The study cohort included 588 988 courses of roxithromycin, 160 297 courses of clarithromycin, and 4 355 309 courses of penicillin V. A total of 18 cardiac deaths occurred during current use of clarithromycin (incidence rate 5.3 per 1000 person years), 32 during current use of roxithromycin (2.5 per 1000 person years), and 235 during current use of penicillin V (2.5 per 1000 person years). Current use of clarithromycin was associated with a significantly increased risk of cardiac death (adjusted rate ratio 1.76, 95% confidence interval 1.08 to 2.85). Current use of roxithromycin was not associated with an increased risk of cardiac death (adjusted rate ratio 1.04, 0.72 to 1.51). For clarithromycin, the relative risk was higher in women than in men (adjusted rate ratio 2.83 (1.50 to 5.36) in women and 1.09 (0.51 to 2.35) in men), although not significantly so (P=0.07). We observed no significant differences between people aged 40-64 and those aged 65 years or over (P=0.67) or between those with and without concomitant use of cytochrome P450 3A inhibitors (P=0.92). For roxithromycin, we observed no significant differences in relative risk between women and men (P=0.71) or between people younger than 65 years and those aged 65 years or over (P=0.06). No cardiac deaths occurred among users of roxithromycin with concomitant use of cytochrome P450 P3A inhibitors.

Risk of cardiac death associated with use of clarithromycin and roxithromycin compared with penicillin V

	Cardiac deaths	Incidence rate/ 1000 patient years	Rate ratio (95% CI)	
			Unadjusted	Propensity score adjusted
Current use				
Clarithromycin	18	5.3	2.07 (1.28 to 3.35)	1.76 (1.08 to 2.85)
Roxithromycin	32	2.5	1.00 (0.69 to 1.44)	1.04 (0.72 to 1.51)
Penicillin V	235	2.5	1.00 (reference)	1.00 (reference)
Past use				
Clarithromycin	14	1.3	1.24 (0.73 to 2.13)	1.06 (0.62 to 1.82)
Roxithromycin	42	1.0	1.01 (0.73 to 1.40)	1.06 (0.76 to 1.46)
Penicillin V	308	1.0	1.00 (reference)	1.00 (reference)

Bias, confounding, and other reasons for caution

We did not have information on several important factors that may influence the risk of cardiac death, such as smoking and body mass index. Data on specific infections for which the drugs were prescribed were not available. Thus, despite adjustment for propensity scores, residual confounding cannot be ruled out.

Generalisability to other populations

Results from this nationwide study in Denmark are applicable to similar populations.

Study funding/potential competing interests

This research received no specific grant from any funding agency in the public, commercial, or not for profit sector.