Comparison of sternal pain and narcotic requirement after cardiac surgery between new rigid closure and conventional wire closure: follow-up results of 50 randomizations.

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Objective
To investigate if rigid closure reduces sternal pain

Methods
Prospective randomized CABG +/- valve
Study period: 07/2011 – 1/2013
Rigid fixation: n=24
Wire closure: n=26

Total Narcotic Requirement

Pain Score

Randomization

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Preop and Intraop Exclusions

Preop exclusions (147)
- Age >80 (26)
- Emergency (12)
- Redo sternum (20)
- Hx of Osteoporosis (11)
- Radiation hx (2)
- Malignancy (11)
- Immunosuppression (4)
- Known coagulopathy (4)
- Infections, IE (7)
- Metal allergy (2)
- BMI above 40 (6)
- Compliance (8)
- Refusal (19)

Preop exclusions (147)
- Unexpected aortic surgery (3)
- Osteoporosis (6)
- Bleeding (8)

Preop exclusions (147)
Preop exclusions (147)
Total number of Randomization
N=50

Patient Risk Factors

Rigid Wire P
Age 65 ± 9 65 ± 9 0.91
Male 20 (83%) 21 (81%) 0.81
BMI 31 ± 5 29 ± 5 0.39
Poor EF(<40%) 4 (16.7%) 3 (11.5%) 0.60
Diabetes 12 (50%) 11 (42.3%) 0.59
Insulin user 6 (25%) 9 (34.6%) 0.46
Smoking 6 (25%) 11 (42.3%) 0.19
PVD 2 (8.3%) 2 (7.7%) 0.93
Cr above 1.5 1 (4.2%) 0.29
CABG 15 (62.5%) 20 (76.9%) 0.27
Valve 7 (29.2%) 4 (15.4%) 0.24
CABG + Valve 2 (8.3%) 2 (7.7%) 0.93

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Conclusion
There was a trend of less narcotic requirement in group R

Implications
Rigid fixation may potentially improve immediate sternal pain after open heart surgery.
Less narcotic requirement potentially facilitate early return to the normal activity. Larger population is required to justify study.

Narcotic Requirement Dosage Calculation


Day 1 Day 2 Day 3 Day 4 Day 5
0.0 1.0 2.0 3.0 4.0

Trend of less pain in R group

Day 1 Day 2 Day 3 Day 4 Day 5
0.0 0.5 1.0 1.5 2.0

There was a trend of less narcotic requirement in group R

Postop Outcomes

Intubation hours
Rigid 7.6 ± 5.0
Wire 10.5 ± 10.5
P 0.21

Intubation >24h
Rigid 0
Wire 2 (7.7%)
P 0.17

ICU stay hours
Rigid 51.5 ± 26
Wire 49 ± 41.7
P 0.79

ICU stay > 48h
Rigid 10 (42%)
Wire 10 (39%)
P 0.82

Postop stay days
Rigid 7 (29.2%)
Wire 8 (30.8%)
P 0.90

Postop CVA
Rigid 1 (4.2%)
Wire 0
P 0.29

Atrial Fibrillation
Rigid 1 (4.2%)
Wire 0
P 0.29

Superf sternal infection
Rigid 1 (4.2%)
Wire 0
P 0.29

Deep sternal infection
Rigid 1 (4.2%)
Wire 0
P 0.29

Pneumonia
Rigid 0
Wire 1 (3.8%)
P 0.33

There was a trend of less narcotic requirement in group R

Postop Outcomes

Total number of CABG +/- valve
N=214

Preop exclusions (147)
Total number of Randomization
N=50

Preop exclusions (147)
Preop exclusions (147)
Preop exclusions (147)

Rigid Wire

Rigid Wire

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