**ACPRC Sternal Precautions Meeting**

**09.06.21**

**70 attendees**

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| **Allaina Eden: Feedback from Survey Monkey on use of sternal precautions in attending centres (Royal Papworth Hospital, UK)**  41 responses from variety of professions (predominantly physios)  50% of responders use full sternal precautions, 20% move in the tube or similar, 20% other, 10% none.  Majority of sternal precautions used are for all patients, with 20% of responders risk assessing use of SPs.  Precautions are largely determined by surgeons, though some centres are led by physio.  Huge number of risk factors considered with implementation of SP.  15/47 no sternal protection devices. Remainder of responses use variety of devices. |
| **Doa El-Ansary: Sternal Precautions and Physical Activity After Cardiac Surgery: What is the evidence? (Swinburne University of Technology, University of Melbourne, Westmead Private Hospital, Australia)**   * Sternal instability prevalence 1-8% worldwide but hasn’t changed over last 3 decades * Ultrasound is a valid and reliable diagnostic tool - Australia have developed US of sternum for nurses and physios * Balachandran et al 2016 found key risk factors for sternal complications are: Obesity/high BMI, IMA grafting, diabetes, resternotomy, increased blood loss/number of transfused units, female gender with large breast size, large chest circumference (<https://www.annalsthoracicsurgery.org/action/showPdf?pii=S0003-4975%2816%2930542-2>) * Majority of evidence used for sternal precautions based on cadaver studies * Significant evidence to support the use of bilateral UL movement determined by comfort/pain. 2mm sternal micromotion observed during bilateral UL movement. * DEA and colleagues developed the Sternal Instability Scale (SIS) which allows physical assessment of sternal instability using valid and reliable tool. Routinely used by physiotherapists. * Moved towards Move in the tube type precautions which increases discharge home following cardiac surgery (https://onlinelibrary.wiley.com/doi/abs/10.1002/pmrj.12562) |
| **Nicola Cooper (ACPICR) – Sternal Precautions and Cardiac Rehabilitation (Royal Papworth Hospital, UK)**   * CR look at moderate intensity CV exercise and strength training for all cardiac patients, about 10 days post d/c. Easy with cardiology patients but challenging with surgical patients – usually around 6/52 due to sternal healing. * Guidance says strength training twice per week * CR interest in getting surgical patients started earlier * Literature review looking at evidence for waiting 6/52 completed in 2016 https://www.acpicr.com/data/Page\_Downloads/EarlyActivityAfterCardiacSurgery2016-Booklet-A4\_0.pdf * Current trial: SCAR trial, led by Gordon McGregor- <https://bmjopen.bmj.com/content/8/3/e019748> * Just finished data collection and now collating results. Investigating commencing CR at 2/52 vs standard 6/52 post cardiac surgery. Results awaited but early suggestion that there were no significant incidents. |
| **Susan Eriksen: Benchmarking the use of sternal precautions in the UK (St. George’s, UK)**   * Electronic survery looking at use of sternal precautions, types and length of restrictions, and reasons for use. * 19 centres responded. 18 of these use sternal precautions. * Most common type of restriction were lifting restrictions, followed by transfer restrictions, with a small number of centres also restricting walking aid use and range of movement. * Length of restrictions was 6-12 weeks most commonly * Primary aims of sternal precautions were to promote sternal healing and prevent wound breakdown. * Basis for the use of sternal precautions was largely workplace policy and clinical experience. |
| **Q&A**  **Q.How long do you recommend staying in the tube post surgery?**   * DEA: 50% of pts don’t have sternal consolidation at 6/12 but sternum is clinically stable * Sternum doesn’t behave in the same way as long bones upon which healing studies are based * 6-8/52 but be guided by your patient   **Q. Are patients able to put their own TEDS on if following 'in the tube' precautions?**  Yes. We encourage patients to use their arms within the safe limits of pain and discomfort.  **Q. Do patients tend to still be compliant with precautions when they start CR at 6 weeks post surgery?**   * NC: The majority are still compliant and fairly scared to do anything. Often treat shoulder problems and scapula asymmetry issues.   **Q Can I ask how you manage your cardiac rehab in collaboration with the surgeons?**   * Are surgeons suggesting you follow sternal precautions and then retrospectively changing precautions. * AE: Currently at RPH, blanket precautions. * NC: ? if Cardiac surgeons are best link for bone healing – tend to go with history of precautions. * Those in SCAR trial had surgical consent to be involved in early Rx arm   **Q. Do you see restriction in GHJ movement or frozen shoulder in patients as they commence Cardiac Rehab post-op?**   * NC: Yes. At least 1 out of 40/50 patients have shoulder problems, requiring taping and scapula setting   **Comment**   * FB: A brief comment to say that early exercise really help decrease anxiety and depression, both of which affect bone and scar healing * EA - Agree. We have often missed this in research studies as we usually measure functional or physical outcomes only   **Q. How does move in the tube fit in with using mobility aids such as zimmer frames and walking sticks?**  - DEA- Discussion ongoing in Australia. Walking aids not specifically investigated but pushing up through arms with equal pressure resulted in less than 2mm in micromotion with no pain. Suggestion is therefore to assess walking aid use against pain and discomfort.  All patients use excess force in ADLs but patients ultimately need to go home!  We found that pushing up from a seated position with equal press through both arms resulted in less than 2mm sternal micromotion. Perhaps we assess and evaluate each patient and aim to work within the limits of pain and discomfort   * In Bristol we risk assess per patient for walking aids - in discussion with surgeons if required but not routinely * Multiple centres discuss with surgeons if significant UL weightbearing * We got good buy in for walking aid use and moved from making it as a PT assessment based on pain etc. vs. having surgon need to advice.   **Q. Are there any particular high risk groups that would be contraindicated to 'move in the tube?**   * DEA - Safe for everyone but all risk assessed. If someone has an unstable sternum, must be reported to surgeon for rewiring is best management.   **Q. is there new ways of fixing the sternum at the surgical level?**   * RPH – still use sternal wires * DEA – slow innovation in comparison to orthopaedics. Sternal wires are cheap. Some use of variations e.g. double wiring, with similar outcomes. Some use of wires alongside glue resulting in consolidation of sternum within 5 hours. US showed no movement at sternum in 5 hours. Latest product is sternalock – rigid fixation. Australian group found less movement at sternum and less pain, but same healing and LoS therefore cost effectiveness needs to be considered.   **Q. What sleeping positions are recommended?**   * DEA - any that are comfortable and within limits of pain and discomfort * NC - as pain allows. which usually rules out sleeping on side or front for a few weeks. * LJ - Agreed Re sleep! whichever position feels most comfortable.   **Q. For people currently working on projects to review SPs and revert to a move in the tube approach - what outcome measures, if any, are you using?**   * DEA – pain scale, sternal instability scale * MG Looked at functional outcomes as well   **Q. Have you found move in the tube are working well for clamshell incisions as well as median sternotomy?**   * DEA - Clamshell incisions have much higher rate of sternal instability – 30-40%. Less than 2mm of micromovement on assessment of UL movement   **Q. Are other UK centres assessing sternal instability?**   * DEA –In Australian group, physios routinely assess. Instability and infection often found together prompting assessment. Scale is reliable and valid. US also being used routinely to assess sternal instability ahead of weighted exercise. * NC RPH - no. but i'd love to! * LJ - Nope but sounds like a great addition to our skill set! * LH Swansea - I do assess sternal instability in cardiac rehab but not routinely and its a crude approach, mainly palpation, I certainly will be looking up SIS.   **Q. Would you use unilateral walking aids?**   * SE (St. Georges) – balance of need to get mobile. Unlikely to be putting extreme amount of support through walking stick. * LM (GSTT) - Use unilateral if needed - risk Ax and practical approach at GSTT * LJ (LJ)- we use unilateral in Bristol * PE (Harefield) - Yes - similar to GSTT here at Harefield * SK - yes we use unilateral if for balance/confidence, but if heavy use would add in 2 sticks or 2 crutches * MG (Nottingham) - Yes we use unilateral * EM (RPH) – Yes we use unilateral walking aids * SE (Southampton) – At Southampton Avoid unilateral walking aids. Needs surgical permission for any walking aid. Slows recovery of cardiac surgery patients.   **Comment:** If implementing KYMITT, what kind of outcomes should be collected? DEA   * Incidence of sternal infection * LoS * Collective approach needed – champion, patient education resources (video, flyer) * Promote “this is what you can do” rather than restrictive approach   **Comment:**  LN - The resources will be an immense help to support our change of practice. I agree, national data collection will be so useful to keep momentum and develop continuity nationally  **For those who have already changed their practice how and when in the process did they engage with their surgeons?**   * MG (Nottingham)- We gave then feedback from CR re reduced function and impact of sternal precautions, engaged them early. * AE (RPH) – just at the stage of engaging surgeons, with a good idea of evidence and what we want to do.   **Comment:** If anyone is keen to discuss sternal precautions in paeds (especially in regards to developmental assessments) - please email us at gosh via [lee.carter@gosh.nhs.uk](mailto:lee.carter@gosh.nhs.uk)  **Comment:** JM -We are just starting an ERAS MDT and part of this will include move in the tube (  **Next steps…**  SK (Leicester) – What are other centres experiences of implementing move in the tube?   * DEA: The Cardiac Surgery Enhanced Recovery Guidelines 2019 does promote move in the tube and physios are regarded as the movement specialists. DEA happy to share videos demonstrating what happens at sternal edges on movements. Use of data and statistics are encouraged! * MG (Nottingham) – Implemented move in the tube in Nottingham. In process of looking at wound breakdown incidence and happy to share. * VN (Hammersmith) – Majority of surgeons not overly concerned about removal of sternal precautions. Therefore switched to risk assessment by therapist including walking aids. Some discussion for more heavy duty aids e.g. sara steady. Implementation changes and reviews stopped due to covid. No huge changes in sternal healing etc noted.   NC (RPH) Evidence needed from orthopaedic surgeons? Surgeon to surgeon education may be beneficial. WB promotes healing of fracture so this could be used to support change.  DEA: > 2mm of micromovement promotes necrosis.  **Comment:** Would it be helpful to put together an evidence statement that could be endorsed by the ACPRC/CSP to show to surgeons? We have something in Australia called Choosing Wisely that is endorsed by the Australian Physiotherapy Association for other issues…just a thought  ACPRC editorial board completing cardiac scoping review.  AE (RPH) - to put forward to editorial board if this is something that can be looked at once current scoping projects completed. Alternatively respiratory leaders group via Eleanor Douglas.  Position statement will facilitate moving forward with sternal precautions. |
| **Actions**  MG to send data to AE to circulate  DEA to send the paper for assessment of sternal instability.  AE to circulate above resources alongside previous resources already sent.  AE to discuss sternal precautions scoping review/position statement to ACPRC editorial board upon completion of current projects. |