



CWIS Chest Wall Injury Summit 2023

Oral Presentation Abstract Submission

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Title of Presentation Trends in publications for Surgical Stabilisation of Rib Fractures: A Systematic Quantitative Literature Review

Background

Surgical stabilization of rib fixation (SSRF) in trauma patients has increased in recent years with an array of supporting literature reporting varying injury patterns, patient outcomes and complications. The aim of this systematic quantitative literature review (SQLR) was to identify the breadth and depth of SSRF literature over time, to identify any common themes and/or gaps within current evidence base

Methods

A search of the EMBASE, MEDLINE CINAHL and Cochrane databases was conducted using the search terms 'surgical stabilization of rib fractures' and 'blunt chest trauma'. 1062 articles were identified and underwent title and abstract screening, followed by full text (n =150) screening against the exclusion criteria, which included non-English language literature, abstracts only or single patient case studies. 110 studies were included in the final review.

Results

Included articles consisted largely of cohort (n=75, 66 %) and retrospective (n=89, 77%) studies. Over half were published in the USA (n=59, 54%), with 88% (n=97) published within the last decade (2011 – 2021) and over 70% (n=79) in the last 5 years. In studies that reported types of injuries, multi-trauma accounted for most injuries included (80%, n=93); 16% (n=18) were isolated chest injuries. Chest wall instability was reported in just over half of those

included (n=59, 54%).

Hospital outcomes such as length of hospital and ICU stay, were consistently documented in over 70% of studies, irrespective of year of publication. Health economic outcome data was described with increasing frequency within the last 5 years (n=6, 10%).

Complications regularly included the mortality rates (n=54, 49%) and the incidence of pneumonia (n=55, 50%). The reporting of infection (surgical site/hardware) appeared with increased frequency (n=14, 78%) between 2010-2015, compared with the last 5 years (2016-2021) (n=21, 36%).

Patient reported outcomes were present in 40% (n=44) of studies and were largely related to pain (n=36, 33%) and quality of life (n=16, 15%). Longitudinal patient outcomes, ranging from 1 month up to 4 years post SSRF, were frequently published within the literature from 2016 onwards. However, whilst pre 2019 the percentage of studies incorporating longitudinal outcomes ranged from 40 – 56%, the last three years (2019 – 2021) denotes a reduction in this area, ranging from 19 – 31%.

Conclusion

Despite the vast increase in published literature regarding SSRF within the last ten years, reported outcomes have remained consistent over time. Patient Reported Outcome Measures within the trauma populations are increasingly popular, although, this is not reflected in the findings, with a reduction in publication of longitudinal patient outcomes. This could, however, reflect the equipoise of pain and quality of life outcomes reported in recent studies that have compared SSRF against non-operative management. The recent move to incorporate health economic data is welcomed, as determining value for money for the health care provided is essential.

Future SSRF studies should be encouraged in publicly funded healthcare systems and include economic analysis and longitudinal long-term patient outcomes to ensure findings are applicable to a wide population.