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A systematic review of randomized controlled trials and reviews in the management of ventral hernias



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ARTICLE INFO

Article history:

Received 5 March 2016

Received in revised form

13 April 2016

Accepted 3 May 2016

Available online 10 May 2016

Keywords:

Literature

CONSORT

PRISMA

Ventral hernia

Umbilical hernia

Incisional hernia

ABSTRACT

Background: The literature supporting ventral hernia management is growing; however, it is unclear whether the quality of work is improving. We hypothesize that the quality of clinical ventral hernia research has improved over the past 2.5 decades.

Methods: A review of MEDLINE, Scopus, and Cochrane databases was conducted for all ventral hernia studies from January 1, 1980 to May 1, 2015. Relevant abstracts were assigned a level according to the Oxford Center for Evidence-Based Medicine. Reviews, and meta-analyses were graded using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Checklist and randomized controlled trials (RCTs) using the Consolidated Standards of Reporting Trials (CONSORT) checklist. Studies that did not fulfill at least 70% of the elements for the PRISMA (19/27) or CONSORT (26/37) checklists were considered to contain substantial methodological flaws.

Results: Of 12,431 citations, 1336 met criteria for quality evaluation. Level 1 studies were sparse ($n = 104$, 7.8%), and most were level 2 or 3 ($n = 463$, 34.7%) or 4 ($n = 769$, 57.6%). Of the level 1 studies, 37 (35.6%) were RCTs, 61 (58.7%) were reviews and/or meta-analyses, and 6 (5.8%) were consensus statements. Most RCTs and reviews and/or meta-analyses contained substantial methodological flaws (75.7%, 75.8%). Critical areas of weakness in RCTs were explaining losses and exclusions after randomization and/or allocation and reporting determination of sample size. For reviews and/or meta-analyses, areas of weakness were presenting an electronic search strategy and providing an assessment of risk of bias before pooling data. Linear regressions of PRISMA and CONSORT scores demonstrated improvement over time (PRISMA slope 0.95, $R^2 = 0.24$; CONSORT slope 0.34, $R^2 = 0.08$).

This work was presented at the first World Conference on Abdominal Wall Hernia Surgery 2015 in Milan, Italy.

Registered on: <http://www.crd.york.ac.uk/PROSPERO/> (registration number CRD42015020261).

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0022-4804/\$ – see front matter © 2016 Elsevier Inc. All rights reserved.

<http://dx.doi.org/10.1016/j.jss.2016.05.009>

Conclusions: Although the quality of literature guiding ventral hernia management has improved over time, there is room for improvement.

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Introduction

The number of ventral hernia repairs performed in the United States has steadily increased over the past 2 decades, and it is estimated that nearly 400,000 ventral hernia repairs will be performed in 2016.¹ Similarly, the number of peer-reviewed publications on the management of ventral hernias has increased substantially over the past 2 decades.^{2–4} However, it remains unclear whether the quality of publications has increased concomitantly.

The Oxford Center for Evidence-Based Medicine provides guidelines to rank level of evidence.^{5,6} The highest level of evidence (level 1) to guide decision-making includes

randomized controlled trials (RCTs), systematic reviews, and meta-analyses, whereas case reports, case series, and expert opinion represent the lowest level of evidence (level 4).⁵ Guidelines for publishing and reporting data have been established: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was published in 2009, and Consolidated Standards of Reporting Trials (CONSORT) was established in 1996 and revised in 2001 and 2010.^{7,8} These are evidence-based recommendations aimed at improving reporting in reviews, meta-analyses, and RCTs.^{9–14} Adherence to reporting guidelines of randomized trials has been correlated with the quality of research methodology.^{15,16} Given that ventral hernia research is a rapidly expanding field, it is

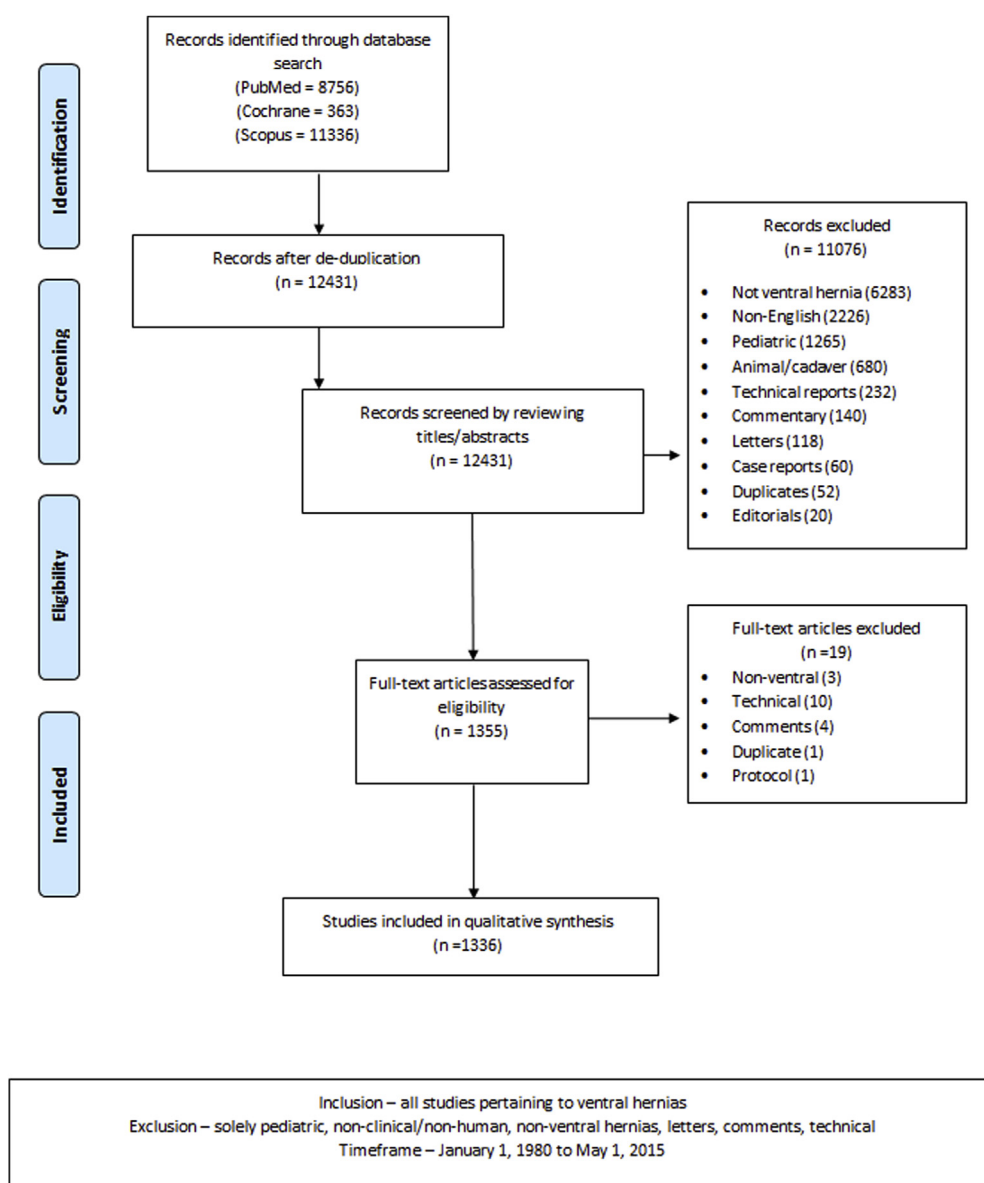


Fig. 1 – Systematic review. (Color version of figure is available online.)

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