AB019. SOH23ABS_242. Diagnostic accuracy of intraoperative methods of margin assessment in breast cancer surgery: a systematic review and meta-analysis

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Background: There are a wide variety of intraoperative techniques available in breast surgery to achieve low rates for positive margins of excision. The objective of this systematic review was to determine the diagnostic accuracy of intraoperative breast margin assessment techniques, establishing a benchmark against which novel techniques may be compared.

Methods: This study was performed in accordance with PRISMA guidelines. A systematic search of the literature was conducted to identify studies assessing the diagnostic accuracy of intraoperative margin assessment (IOMA) techniques. Only clinical studies with raw diagnostic accuracy data as compared with final permanent section histopathology were included in the meta-analysis. A bivariate model for diagnostic meta-analysis was used to determine overall pooled sensitivity and specificity for each technique.

Results: Sixty-two studies were included for meta-analysis. The majority of studies evaluated specimen radiography (n=20), frozen section (n=14) and cytology (n=13). Other techniques such as intraoperative ultrasound (n=7), optical spectroscopy (n=5), margin probe (n=3) and micro-CT (n=3) were less commonly evaluated. Frozen section, optical spectroscopy and cytology had the greatest diagnostic accuracy with sensitivities of 80%, 89% and 88%, respectively, and specificities of 97%, 94% and 93%, respectively.

Conclusions: Pooled data indicate that optical spectroscopy, cytology, and frozen section have the greatest diagnostic accuracy of currently available IOMA techniques. However, long turnaround time for results and their resource intensive nature has prevented widespread adoption of these methods. The aim of emerging technologies is to challenge the diagnostic accuracy of these established techniques, while improving speed, cost, and usability.

Keywords: Breast cancer; breast conserving surgery; surgical oncology; margin assessment; intraoperative

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Footnote

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