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Defining the limits of caesarean scar niche repair: new anatomical landmarks

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Abstract

Background: Caesarean scar niche is increasingly being seen due to the rise in the number of caesarean sections worldwide. Indications and the ideal route for niche repair are still being researched. If the residual myometrium is less than 3 mm thick and potential fertility is needed, laparoscopy is the ideal surgical method for caesarean scar niche repair. The aim of this video presentation is to demonstrate techniques of identifying new anatomical landmarks during laparoscopic uterine niche repair.

Results: As seen in the video, Caesarean scar niche repair can be done in a step-by-step manner, with lateral bands serving as anatomical landmarks.

Conclusions: Lateral bands are a consistent anatomical landmark which identify the level and width of the uterine niche and thus simplify the laparoscopic repair making this a reproducible technique.

Keywords: Caesarean scar niche, Niche repair, Laparoscopic, Lateral bands

Background

The uterine niche develops as a result of myometrium discontinuation following a caesarean section due to inadequate healing. As a result of rising caesarean scar section rates and improved imaging modalities, a growing number of symptomatic and asymptomatic niches are being identified. However, the indications and routes for caesarean scar niche repair are still being investigated. A literature review [1, 2] shows that there may be impairment of fertility in the presence of a niche, with the risk of reduced conception of between 4 and 19%. Laparoscopy is the preferred surgical approach for repair of caesarean scar niche, particularly if the residual myometrium is less than 3 mm thick and future fertility is desired [3, 4]. This video demonstrates a laparoscopic repair of caesarean scar niche repair.

Methods

Study objective

To demonstrate techniques of identifying new anatomical landmarks during uterine niche repair.

Design

Stepwise demonstration with narrated video footage (Canadian Task Force classification III).

Setting

Advanced Minimally Invasive Gynaecological Surgery Unit, Campbelltown-Liverpool Hospital.

Interventions

A 36-year-old, para 1 presented with secondary infertility 3 years post caesarean section performed for dystocia. Fertility investigations revealed mild endometriosis with a caesarean scar niche with residual myometrial thickness of 4 mm identified with saline infusion sonography. She initially underwent 3 IVF cycles without success. After counselling, she was offered caesarean scar niche repair using a combination of laparoscopic and hysteroscopic approach. The limits of the niche can be

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identified by the "Halloween sign" which involves a combined hysteroscopic and laparoscopic approach. Another method to identify the extent of the caesarean scar niche are "lateral bands" of the uterine niche found at laparoscopy, first described by *Dr. Sandesh Kade* from India. The video below demonstrates methods of identifying the lateral bands, the "Halloween sign" and repair of the caesarean scar niche.

Results

With the help of lateral bands as a marker, the uterine niche can be adequately excised.

Discussion

Attributing asymptomatic niche as a cause of otherwise unexplained infertility and then offering repair is a topic under investigation right now, with no clear answers. Many theories have been proposed to explain why it causes infertility, such as the fluid stored in the niche being harmful to sperm and altered immunobiology [5]. Because the majority of the current evidence is based on case series, a prospective trial is required to assess the usefulness of niche repair. The results of this study would also be beneficial in the pre-treatment for infertility cohort, as it may be able to inform us on if we should offer IVF early on in the treatment, prior to repair of niches. The authors of the study conclude that in cases of unexplained secondary infertility where a caesarean scar niche is the only recognisable cause, niche repair should be considered after a thorough discussion with the woman prior to or after IVF. During niche repair, identifying the limits of niche can be challenging. Our video demonstrates a step-by step method with replicable and easily identifiable landmarks in an effort to standardise the procedure.

Conclusion

Lateral bands are a consistent anatomical landmark which identify the level and width of the uterine niche and thus simplify the laparoscopic repair making this a reproducible technique.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s10397-021-01099-2.

Additional file 1: Supplementary Video. Demonstrates the identification of lateral bands and repair of caesarean scar niche.

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We would like to acknowledge Dr. Sandesh Kade, who was the first to describe the lateral bands as an anatomical marker.

Authors' contributions

TR wrote the manuscript and recorded and edited the video. NL and BG substantively revised it. TC made contributions to the conception, technique development and revision of manuscript. TC and TR were both involved in the surgical demonstration video. All authors read and approved the final manuscript.

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Availability of data and materials

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Declarations

Ethics approval and consent to participate

Ethics approval was waived off due to the nature of study.

Consent for publication

Consent to participate and publication in recording of the surgical video were obtained from the patient (can be provided if needed).

Competing interests

There are no conflicts of interests between the authors (forms can be provided if needed).

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References

1. Gurol-Urganci I, Cromwell DA, Mahmood TA, van der Meulen JH, Templeton A (2014) A population-based cohort study of the effect of Caesarean section on subsequent fertility. Hum Reprod. 29(6):1320–1326
2. Gurol-Urganci I, Bou-Antoun S, Lim CP, Cromwell DA, Mahmood TA, Templeton A et al (2013) Impact of caesarean section on subsequent fertility: a systematic review and meta-analysis. Hum Reprod. 28(7):1943–1952
3. Nezhat C, Falik R, Li A (2017) Surgical management of niche, isthmocele, uteroperitoneal fistula, or cesarean scar defect: a critical rebirth in the medical literature. Fertil Steril. 107(1):69–71
4. Donnez O, Donnez J, Orellana R, Dolmans MM (2017) Gynecological and obstetrical outcomes after laparoscopic repair of a cesarean scar defect in a series of 38 women. Fertil Steril 107(1):289–96.e2
5. Vissers J, Hehenkamp W, Lambalk CB, Huirne JA (2020) Post-caesarean section niche-related impaired fertility: hypothetical mechanisms. Hum Reprod. 35(7):1484–1494

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