New modified undermined suture technique for rectus muscle re-approximation at cesarean delivery—Case report

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ABSTRACT

INTRODUCTION: Diastasis recti abdominis (DRA) is characterized by the separation of the two rectus abdominis muscle along the linea alba. A newly modified undermined suture rectus muscle technique at cesarean delivery is created with improved post-operative outcome.

PRESENTATION OF CASE: A 30-year-old woman, who had a previous cesarean delivery, opted for another cesarean section (CS) during this pregnancy. She claimed that her tummy was lax after her first experience of CS even with regular exercise. A standard CS procedure was carried out along with the new modified undermined suture technique for rectus muscle re-approximation. Post-operatively, the pain score was 2/10 without any evidence of hematoma, seromas or infection and the patient ambulates well. The patient did not complain of any pain or complications upon follow up after 2 weeks and 2 months post-operation. She claims that her abdomen is firmer, flatter and more stable compared to her previous operation experience.

DISCUSSION: This newly modified method prevents any defect or weakness on the anterior abdominal wall even if the rectus muscles fail to oppose itself during the healing process. It also mimics the function of the linea alba and avoid interrupting the contraction or injuring the muscle in order to avoid pain. Adhesion of the anterior uterine wall and the rectus sheath can be prevented by closure of the rectus muscle and burying the suture material within the muscle.

CONCLUSION: The newly modified undermined suture rectus muscle technique at cesarean delivery has the potential to improved patient’s post-operative satisfaction.

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1. Introduction

Diastasis recti abdominis (DRA) is defined as an impairment characterized by a midline separation of the 2 rectus abdominis muscles along the linea alba [1].

According to a study by Jorun et al. done in a Norwegian hospital, the prevalence of DRA among first-time pregnant women are between 33.1 and 60.0% [2]. Some proposed causative factors of DRA include older age, multiparity, cesarean section, gestational weight gain, high birth weight and multiple pregnancy [2,3].

Besides cosmetic concern, women with DRA are believed to have reduced lower back and pelvic stability which might lead to low back or pelvic girdle pain, pelvic floor dysfunctions such as incontinence or pelvic organ prolapse in the future [2,4].

Several studies have been carried out over the years to investigate the effectiveness of the corrective exercises with the aim to reduce the incident of DRA among post-partum women [5,6]. A weekly, postpartum, supervised exercise program, which include strength training of the pelvic floor and abdominal muscles, in addition to the daily home training of the pelvic floor muscles, did not show any evidence in reducing the prevalence of diastasis [6].

A study shows that surgical rectus muscle re-approximation by interrupted suture increase immediate postoperative pain, but there is no difference in the operative time, surgical complications, or maternal satisfaction [7].

A new suture method of rectus muscle approximation was created in order to improve the outcome. This operation was consented and carried out in a private hospital, Columbia Asia Hospital Iskandar Puteri, Johor, Malaysia in collaboration with Jeffrey Cheah School of Medicine and Health Sciences, Monash University, Malaysia.

The work has been reported in line with the SCARE criteria [8].

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2. Presentation of case

A 30-year-old, healthy Chinese with a normal BMI, who previously had a cesarean section, opted for another elective Cesarean Section (CS) during this pregnancy. She consented for the operation and the new suture method of rectus muscle (RM) approximation. She claimed that her tummy was lax after her first experience of cesarean section even though regular exercise was carried out.

Upon physical examination, her abdomen was distended with gravid uterus throughout the whole antenatal follow up. No abdominal defect could be elicited due to the masking effect of gravid uterus.

A standard CS procedure was carried out with careful separation of rectus sheath from the RM and LA equally on both sides (Fig. 1). Upon closure of the rectus muscle, an absorbable 1/0 suture was used to make a starting knot at inferior end of the LA (Fig. 2). The Z’ suture method was then applied in between the LA and RM (Fig. 3). An ending knot was made along the rectus sheath at the superior ending (Figs. 4 and 5). Lastly, the rest of the tissues were closed accordingly.

The pain score post-operatively was 2/10, which was settled with the usual analgesia (PCM and NSAIDs). The patient did not require any stronger analgesia such as opiates injection.

There is no evidence of hematoma, seromas or infection and the patient ambulates well post-operatively. She was discharged the next day with NSAIDs for 5 days. Upon follow up after 2 weeks and 2 months post-op, there is no complaint of any pain or complications. She claims that her abdomen is firmer and more stable.

3. Discussion

Comparing this newly modified method to the previous interrupted suture method, there is no interruption of muscle of which there is no ligation and movement restriction to the abdominal muscle. The suture line runs parallel with the muscle fibers and the Z suture method is able to oppose muscles from both sides together. By doing so, any defect or weakness on the anterior abdominal wall could be prevented if the rectus muscles fail to oppose itself during the healing process.

In addition, there is a significant difference of the gripping points of the suture. In an interrupted suture method, the gripping points land on the muscle itself which might lead to dehiscence or pain during muscle contraction. The new modified method lands the gripping point on the rectus sheath inferior and superior to the end point of the muscle. This is to mimic the function of the linea alba and avoid interrupting the contraction or injuring the muscle in order to avoid pain.

The interrupted suture method increases the risk of exposing the rectus sheath and peritoneal area to the suture material, which might lead to adhesion in future. Adhesion of the anterior uterine
wall and the rectus sheath can be prevented by closure of the rectus muscle and burying the suture material within the muscle.

However, more data are needed to confirm the applicability of this new modified method which might be beneficial to the woman. In the case discussed above, the patient complimented that her abdomen is firmer and flatter compared to her previous post operation experience. She is satisfied with the operation outcome.

4. Conclusion

The newly modified undermined suture rectus muscle technique at cesarean delivery has the potential to improved patient’s post-operative satisfaction compared to the interrupted suture technique. More data and further research are needed to assure its applicability.

Declaration of Competing Interest

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Ethical approval

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Consent

Written consent for the operation including repair.
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Yek Song Quek: study concept, design, data collection, data analysis.
Michelle Jia Ni Ling: data collection, writing
Jamiyah binti Hassan: study concept, design, data analysis.

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