

## Case Report

# Successful pregnancy “during” pedicled transverse rectus abdominis musculocutaneous flap for breast reconstruction with normal vaginal delivery

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## ABSTRACT

A transverse rectus abdominis myocutaneous (TRAM) flap is a popular choice for breast reconstruction. Pregnancies in women following a TRAM flap present concerns regarding both safety and the integrity of the abdominal wall. We report a case of a patient who was pregnant during immediate breast reconstruction with pedicled TRAM flap and had a successful spontaneous vaginal delivery. We also conducted a literature review using PubMed on pregnancy post TRAM flap, type of reconstruction, timing of pregnancy after TRAM flap, complication, and mode of delivery, which are summarised in this report. We concluded that patients may have safe pregnancies and normal deliveries following TRAM flap breast reconstruction regardless of the time frame of pregnancy after the procedure. Therefore, TRAM flaps can continue to be a reconstruction option, even in women of childbearing age.

## KEY WORDS

Breast reconstruction; pregnancy; transverse rectus abdominis myocutaneous flap; vaginal delivery

## INTRODUCTION

Breast cancer is one of the most common malignancies in women worldwide. The incidence increases exponentially with age from the third to the fifth decade of life, including women of childbearing age. Today, women are delaying having children for academic, professional, and personal reasons, increasing the likelihood of them becoming pregnant during or after a battle with breast cancer.

Many options for breast reconstruction are available including autologous tissue transfer and implants. Nowadays, more women are choosing to have autologous breast reconstruction concomitantly with their mastectomy. A transverse rectus abdominis myocutaneous (TRAM) flap is one of the popular choices for reconstruction due to its advantages of creating a softer, more natural-appearing breast mound composed of autologous tissue, without the risks associated with manufactured implants and producing an abdominal lipectomy or “tummy tuck” in the donor area. Pregnancy and mode of delivery for women following TRAM flap present concerns regarding both safety and the integrity of the abdominal wall.

We present a case of immediate breast reconstruction with pedicled TRAM flap performed during undiagnosed early pregnancy with successful spontaneous vaginal delivery and an uneventful postpartum period.

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## CASE REPORT

A 25-year-old woman with one previous normal spontaneous vaginal delivery was referred to our team for an immediate left breast reconstruction for a phylloides tumour – BIRADS III.

She first presented to the hospital with a 9-month history of a left breast lump measuring 6 cm × 7 cm. The patient was 2 months pregnant. The initial biopsy showed a benign proliferative lesion with nuclear atypia. The patient received regular follow-up. It was noted that the swelling increased in size during each follow-up until it involved all four quadrants. An ultrasound examination suggested that the mass was a phylloides tumour – BIRADS III. Despite that fact, the patient refused surgery at that time.

After 2 years of follow-up and counselling, the patient finally agreed to the operation. Clinically, her left breast mass measured 20 cm × 15 cm. She underwent a simple mastectomy and immediate breast reconstruction with a unilateral pedicled TRAM flap [Figure 1].

The TRAM flap was raised with the preservation of the rectus sheath as much as possible by identifying the perforators. The flap was transferred and inset, and the rectus sheath was closed primarily using a loop 0 ethilon. Post-operatively, the patient had an uneventful recovery.

At the 2-month follow-up, she was confirmed be 11 weeks pregnant. Both the plastic surgeon and the obstetrician closely monitored her pregnancy. The abdominal wall gradually expanded, according to the stages of pregnancy, without any signs of herniation. At 8 months gestation, a review of her abdominal wall indicated that the integrity was preserved and remarkably, there was little or no change in the width of the donor site scar [Figure 2a and b]. A healthy 2.8 kg baby girl was born at term following an uncomplicated spontaneous vaginal delivery.

The postpartum follow-up was uneventful. The patient presented to our clinic 2 months post-delivery with no complaints. She had a well-preserved abdominal wall integrity and function with no signs of herniation [Figure 3].



Figure 1: Pre-operative left breast pyloides tumour – BIRADS-III



Figure 2: Post-operation at 8 months pregnant. (a) Anterior view (b) oblique view



Figure 3: Two months post-delivery with acceptable abdominal scar

## DISCUSSION

The TRAM flap is commonly performed as a pedicled flap for breast reconstruction. The fascial layer of the donor site is repaired by primary closure or synthetic mesh. Removal of the RAM and the rectus sheath,

especially bilaterally, was believed to cause significant impairment to the integrity of the abdominal wall. Therefore, women of childbearing age have been refused TRAM flap surgery because of incorrect information about post-operation abdominal wall integrity. The best timing for pregnancy after such an operation and the mode of delivery, natural versus caesarean section, are still under debate. Women were also informed that they needed to have a caesarean delivery following the TRAM flap procedure.

According to Hartrampf,<sup>[1]</sup> surgeons need to recall that the uterus is the major muscle that supports a pregnancy and aids in the delivery of a newborn, while the abdominal muscles are secondary in assisting with the delivery. Therefore, after the TRAM flap procedure, a patient should be able to carry and vaginally deliver a full-term newborn.

Over the years, there have been a limited number of published studies about pregnancy after TRAM flap surgery. We conducted a literature search using PubMed on pregnancy post TRAM flap, type of reconstruction, timing of pregnancy after TRAM flap, complication and mode of

delivery, which were summarised in this report [Table 1].<sup>[2-8]</sup> Chen *et al.*<sup>[3]</sup> and Carramaschi *et al.*<sup>[4]</sup> reported the largest series, with seven successful pregnancies. Six out of 20 pregnancies were carried out after bilateral TRAM.<sup>[3,4,8]</sup> There were only two pregnancies that occurred during the TRAM surgery as our case.<sup>[4]</sup> 75% of the reported pregnancies had successful vaginal deliveries. The time interval from surgery to safe pregnancy was previously quoted as 12 months,<sup>[6]</sup> but that was based on only one case of abdominal hernia after conceiving 4 months post-operatively.

Potential donor site morbidities to be concerned with include herniation, fascial tears, scar widening, and excessive compression of abdominal organs if the abdominal wall has not regained the sufficient pliability to accommodate the gravid uterus.<sup>[6]</sup> Of 20 pregnancies following TRAM flap in our analysis, there was one case of abdominal hernia, three cases of abdominal bulge and one hypertrophied scar.

In our case, the patient was not aware that she had conceived when she underwent the surgery. Preservation of part of the fascia overlying the rectus and proper repair of the abdominal fascia after flap harvesting allowed our

**Table 1: Summary of literatures regarding pregnancy following breast reconstruction with TRAM flap**

Literature	Breast reconstruction	Number of reported pregnancies	Timing (month after surgery)	Complication	Mode of delivery
Lawrence and McDonald 1986 <sup>[2]</sup>	Unilateral TRAM	1	5	Abdominal wall hernia	CS
	Unilateral TRAM	1	35	No	CS
	Unilateral TRAM	1	43	No	VD
	Bilateral TRAM	1	46	No	VD
	Bilateral TRAM	1	27	No	VD
Chen <i>et al.</i> , 1993 <sup>[3]</sup>	Unilateral TRAM (double pedicle)	1	14	No	VD
	Unilateral TRAM (double pedicle)	1 (2 <sup>nd</sup> pregnancy after TRAM)	23	No	VD
	Unilateral TRAM (double pedicle)	1	18	No	VD
	Bilateral TRAM	1	4	No	CS
	Bilateral TRAM	1	39	No	VD
	Unilateral TRAM	1	4	No	VD
	Unilateral TRAM	1	Pregnant	Abdominal wall bulge and hypertrophied scar	VD
Carramaschi <i>et al.</i> , 1998 <sup>[4]</sup>	Unilateral TRAM	1	Pregnant	No	VD
	Unilateral TRAM	1	4	No	VD
	Unilateral TRAM	1	31	Abdominal wall bulge	CS
Parodi <i>et al.</i> , 2001 <sup>[5]</sup>	Unilateral TRAM	1	4	Abdominal bulge	CS
Wagner and Ruth-Sahd 2000 <sup>[6]</sup>	Unilateral TRAM	1	18	No	VD
Collin and Coady 2006 <sup>[7]</sup>	Unilateral TRAM	1	14	No	VD
	Unilateral TRAM	1	15	No	VD
Zeligson <i>et al.</i> , 2011 <sup>[8]</sup>	Bilateral TRAM	1	3	No	VD

VD: Vaginal delivery; CS: Caesarean section; TRAM: Transverse rectus abdominis myocutaneous

patient to have a safe pregnancy and normal vaginal delivery. Therefore, abdominal wall integrity can be maintained after TRAM flap surgery, and it is safe to carry a pregnancy resulting in a spontaneous vaginal delivery.

## CONCLUSION

Our case demonstrated that immediate pregnancy following a pedicle TRAM flap is safe with close supervision and supported the previous cases reported in the literature. Therefore, TRAM flaps remain the standard modality for breast reconstruction following mastectomy, even in childbearing age.

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