

## Peer Review File

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### Reviewer A

The paper is a good overview on DIEP flap surgery. However, I miss some important details:

1. To my understanding Koshima published the first cases of this flap in 1989: Koshima I, Soeda S. Inferior epigastric artery skin flaps without rectus abdominis muscle. Br J Plast Surg. 1989 Nov;42(6):645-8.; Allen published his paper in 1994 not 1992.

**REPLY - This has been revised.**

2. The author correctly paraphrases that the DIEP flap is not a teaching operation. With regard to the successful outcome and the clear requirements for this operation, this should be clearly stated.

**REPLY - I have revised the wording to be clearer. I have replaced "teaching hospital" with "university hospital"**

3. ICG is an advantageous tool. However, it would be of interest to distinguish venous from arterial problems regarding fat necrosis.

**REPLY - I have included a sentence clarifying this concern.**

4. The more perforators are harvested; the more muscle damage occurs. This also needs to be discussed. Especially when medial and lateral perforators are used together, the muscle damage is greater than with a single perforator flap. This approach basically resembles a ms-TRAM flap.

**REPLY - I have added additional comments to justify my position on this.**

5. There are very simple techniques to avoid a "pedicle twist". It is not necessary to increase the number of perforators to avoid this problem. Additionally, the length of the pedicle has to be increased to allow inset if a two or three perforator flap is used. Reducing donor site morbidity means: Pedicle length only as long as absolutely necessary and not as long as usual. This allows the fascia incision to be kept short and leaves perfusion in the donor area. The regular DIEP-flap has a fascia incision not longer than 5-6cm. Less pain, less muscle damage, less wound healing problems especially in bilateral flaps.

**REPLY - This has also been explained in the manuscript. There are differing schools of thought on this point and I have emphasized my view and my reasons.**

6. We have switched from thoracodorsal vessels to the IMA and to its perforators. In 60% of my primary cases I use the perforators as recipient vessels this decreases pain, complications and hospital stay (see ERAS).

REPLY - I have added a paragraph on the choice of recipient vessels. There is no evidence that use of the IMA perforators will decrease hospital stay.

7. Nowadays, we no longer monitor postoperatively if the flap is stably perfused for at least 15 minutes during the operation or the ICG shows no problems.

REPLY - I don't think that this is a good idea and certainly would not advocate it to novice microsurgeons. I have included our monitoring protocol.

8. The statement regarding the lymphatics is good.

REPLY - ok

9. I miss a paragraph on intraoperative measures to maintain and control flow....

REPLY - Not sure what you're referring to? We maintain blood pressure and avoid vasoconstrictors but this is nothing new.

10. I miss a paragraph on shaping the flap. The DIEP flap is not just coverage of a defect, it has to look good!

REPLY - Agreed but this is not really a "then versus now" advancement. It's always been a goal to shape the breast.

11. The normal anticoagulation protocol with enoxaparin is well stated.

REPLY - ok

12. We have modified our ERAS. It turned out that local blocks with ropivacaine, the removal of the foley, avoiding postop opioids and same day mobilisation are the key triggers.

REPLY - This has been explained in the manuscript.

13. We have managed to turn the microsurgical "High Mass" into a normal, quick operation with low morbidity. Now we just need the internet and the patients to notice.

REPLY - agreed

## Reviewer B

This manuscript covers the development of the DIEP flap procedure over the last 25 years with the major refinements.

The author elaborates the development of the technique as well as the refinements as well as his personal improvements over the years to achieve the best possible result.

A thorough overview on this matter is given.

Points of critique:

I am missing the difference between primary, secondary and tertiary reconstructions.

The pros and cons for the timing of the procedure would be surely of interest to the reader.

REPLY - I have added a paragraph on this.

line 126-143 Although I am well acquainted with Dr. Nahabedian's work and we share a lot of thought I would be cautious on this part. Our group has extensive experience with more than 2000 DIEP flaps over the last 10 years and we do not recommend or teach this view. I would appreciate if other views on this matter would be shared in the text.

REPLY - I have added additional perspectives on this issue related to the number of perforators.

An overview on current developments and future perspectives would be nice.