

Assessment of the viability and progress of the fasciocutaneous flap based on flap glucose level in comparison to capillary blood glucose level

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I. Introduction:

Aim

To monitor the progress and the viability of the flap by measuring the flap glucose in reference to the capillary glucose level, in par with the colour of bleed from the flap on a pin prick.

II. Methods & materials

35 patients with compound leg defects were treated with fasciocutaneous flap for a period of 18 months [JUL2016-DEC2017]. Out of which, 33 patients were male and 2 were female. Flap glucose was monitored 6 hours after inset of the flap and compared with the capillary blood glucose.

Among 35 patients, 24 patients were treated with RSA flaps which includes lower 1/3rd leg defect & raw area in the tendo Achilles region, 3 patients were treated with Medially superiorly based flap for upper 1/3rd leg defect, 2 patients were treated with Medially inferiorly based flap for mid 1/3rd leg defect, 2 patients were treated with Laterally superiorly based flap for upper 1/3rd leg defect, 2 patients were treated with Laterally inferiorly based flap for middle 1/3rd leg defect, 1 patient was treated with Lateral calcaneal flap for tendo Achilles raw area and 1 patient was treated with Lateral geniculate artery flap for knee defect .

Flap glucose level and the capillary glucose level were compared for the above 35 patients. The results are, 26 patients showed flap glucose level more than 2/3rd of capillary glucose level, in 9 patients flap glucose level was Less than 2/3rd of capillary glucose level, in 7 patients flap glucose level was less than 2/3rd to more than 1/2 of capillary glucose level and in 2 patients flap glucose level was, less than 1/2 of capillary glucose level.

In 9 patients flaps which showed glucose level <2/3rd of capillary blood sugar and venous bleed colour on pin prick, flap return was done. Those flaps with blood sugar level >2/3rd of capillary blood sugar with normal bright red colour on pin prick was retained.

In 26 patients flap glucose level more than 2/3rd of capillary glucose with good colour on pin prick, all the flap survived in this group, whereas in 7 patients whose flap glucose level was <2/3rd >1/2 of capillary glucose level with minimal venous in colour on pin prick survived after immediate flap return within 6 hrs and the last group of 2 patients whose flap glucose level was <1/2 of capillary glucose level invariably necrosed even after flap return has been done within 6 hrs.

Reverse sural artery fasciocutaneous flap done for lower 1/3 of left leg defect with flap glucose level >2/3 of capillary glucose level and colour of flap pin prick bleed was normal after 6 hrs of flap inset. In our study most of the cases were inferiorly based fasciocutaneous flaps .



Flap survived without complications



Lateral calcaneal fasciocutaneous flap for lateral malleolus defect left leg.



Flap glucose level $< 1/2$ of capillary glucose level with colour of flap pin prick was venous and the flap was necrosed totally even after flap return has been done within 6hrs after flap inset.



III. Result

In 26 patients whose flap glucose level was more than 2/3rd of the capillary glucose and the colour of the flap prick bleed was normal, the flap survived in those patients.

In 9 patients, whose flap glucose level was less than 2/3rd of the capillary glucose and the colour of the flap prick bleed was venous, for these patients flap return was done.

Among those returned flaps, a good survival was noted in 5 patients following inset after waiting period of 4 days, 2 had marginal necrosis and 2 had total necrosis.

In flaps with glucose level of less than 50% of capillary glucose, flap did not survive even after flap return.

IV. Conclusion

The flaps glucose level which is $>2/3$ rd of capillary blood sugar monitored serially with 6hrs interval for next 24hrs.

If the flap glucose level is less than 2/3rd of the capillary glucose and the colour of the flap pin prick bleed is venous, flap should be returned.

This enhances the flap survival rate.

This test is easy to perform, cost effective and not time consuming.

Periodic monitoring of flap glucose level in comparison to capillary blood sugar level along with pin prick bleed colour and timely flap return to its original site enhances the fasciocutaneous flap survival rate. Flap reinsert given after a minimal waiting period of 4 days in all the above cases. This simple test reduces the overall morbidity status. Hence most of the cases in our study were inferiorly based flaps, this study mainly useful for inferiorly based flaps.

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