



Split-Thickness Skin Graft Meshing: The True Mesh Ratio

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Background

Skin graft meshing is frequently used to allow coverage of extensive wound areas, reduction of donor site size, and prevention of fluid accumulation underneath the skin graft. Meshers allow for various ratios to be used. Previous studies have described how meshers expanded less than claimed, but this has only been done in cadaver graft, which has less elastic tissue. No studies have confirmed the accuracy of the mesh ratio provided by the manufacturers.

Aim

The objective of this study was to measure the true mesh ratio achieved using some of the most commonly used skin meshers.

Methods

Prospective cohort study
May 2019 – present
Standardized conditions:
Depth 12/1000 inches
4 x 4 cm square
Mesh groups: 1:1, 1.5:1, 2:1, 3:1, 4:1, 6:1



Donor Site Draw 4 x 4 cm squares Measure stretched rectangles

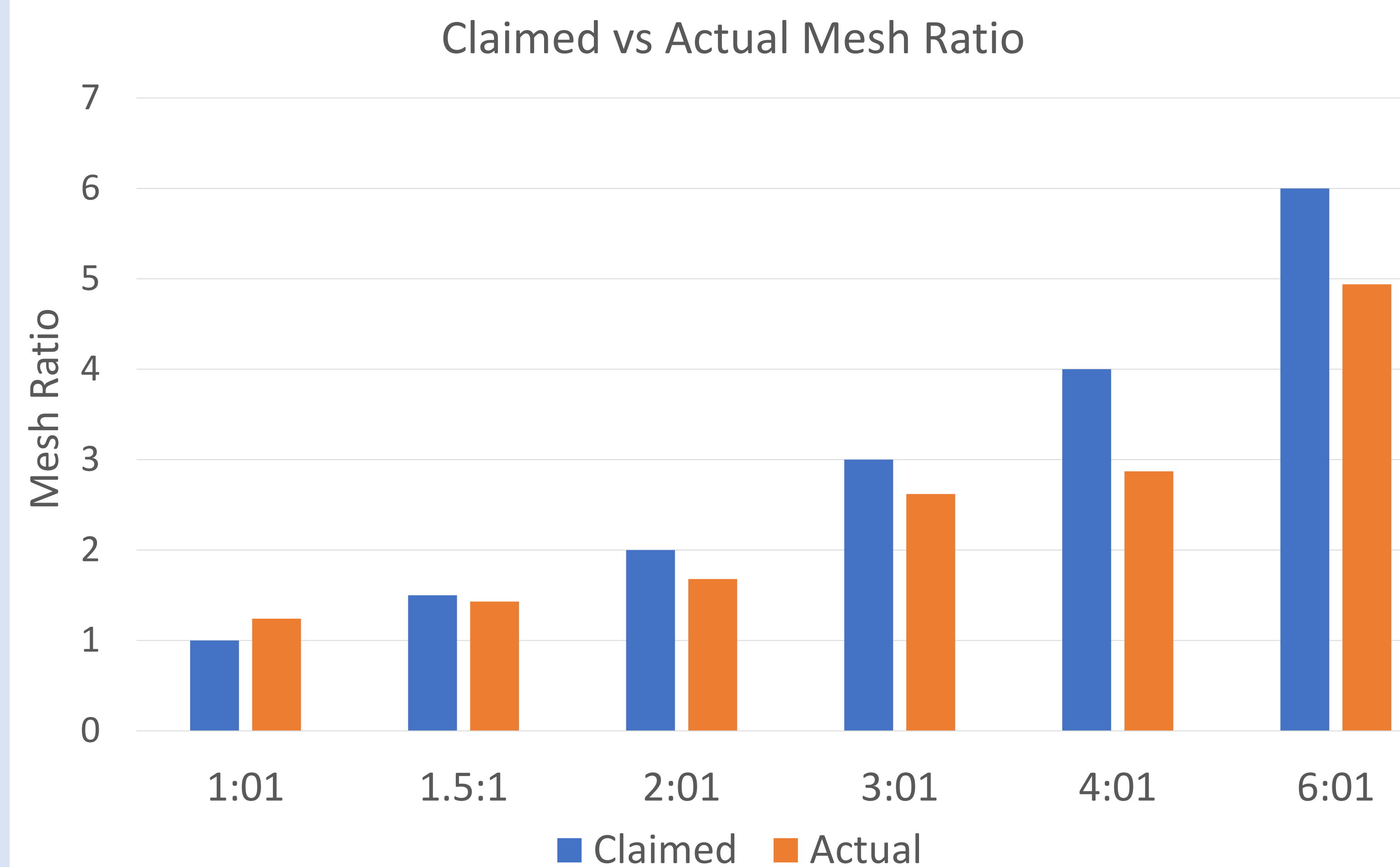
Outcomes:
Pre/post width (cm), Pre/post length (cm), Pre/post surface area (cm²), Experimental ratio, Percent error

Results

Table 1. True Mesh Ratio

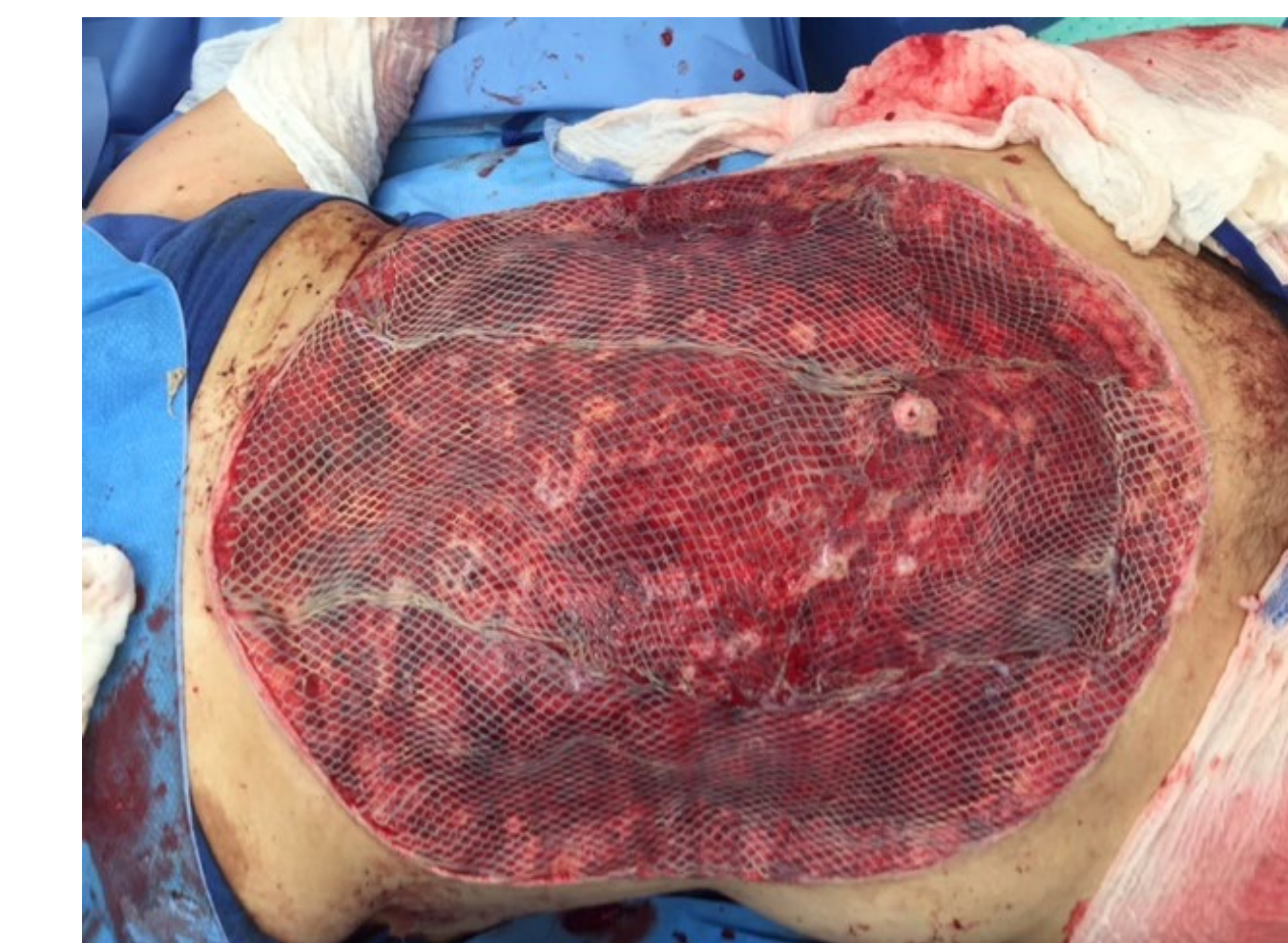
Mesh Ratio	n	True Mesh Ratio (mean ± SD)	Percent Error (%)
1:1	9	1.24 ± 0.17	+ 24.4
1.5:1	10	1.43 ± 0.28	- 4.7
2:1	25	1.68 ± 0.32	-15.8
3:1	22	2.62 ± 0.51	-12.5
4:1	12	2.87 ± 0.92	-28.3
6:1	15	4.94 ± 1..35	-17.68

Figure 1. Claimed vs Actual Mesh Ratio



Different Mesh Ratios

Claimed Mesher ratios for comparison:



3:1



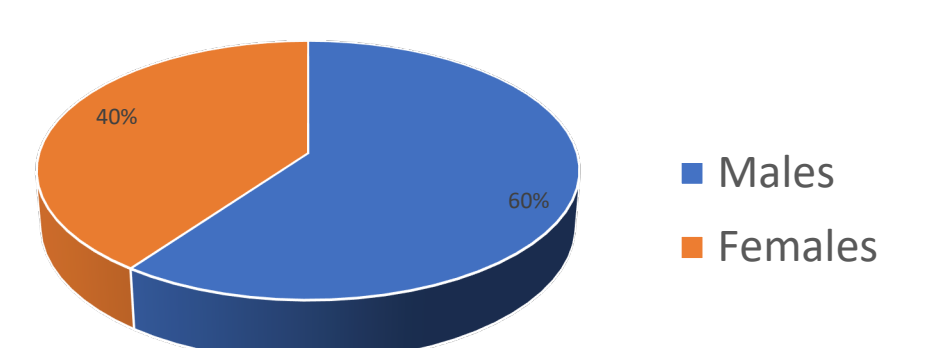
6:1

Ratio = graft site to donor site

Demographics

Demographic Information:
20 patients, n = 93 samples
12 male, 8 female
18 white, 2 non-white
Average age 44.2 ± 21.06 years

Gender Breakdown



Limitations

- Larger sample needed
- Variability in pressure and operator
- Variability in amount of dermis
- Large mesh ratios harder to measure

Conclusion

Mesh ratios of 1.5:1 meshers and above established by manufacturers are inaccurate. Therefore, overestimation of 1.5:1 meshers and above is recommended. We recommend an overestimation of 10% or more for meshers 1.5:1 and above. This study can help guide surgical decisions related to estimating the extent of donor area needed to cover skin and soft tissue defects.