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Perception of Suture Cost Among Mohs Surgeons

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INTRODUCTION

In dermatologic surgery, the two main configurations of suture are monofilament and multifilament. Suture selection is based on various biologic factors but also personal experience, mentor preferences, availability, as well as cost effectiveness. There are few comparative studies evaluating suture choice, especially in terms of cost.

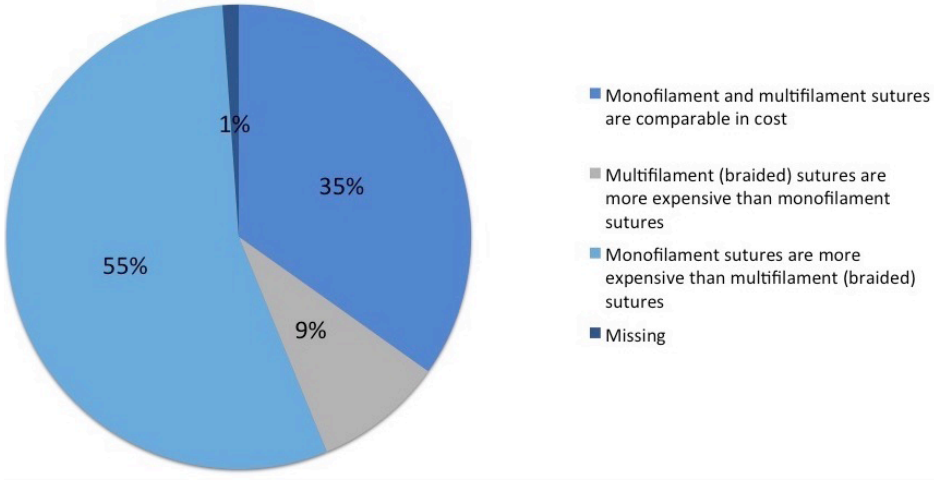
There is a perception that monofilament sutures are significantly more expensive than multifilament, possibly influencing some to avoid monofilament sutures. In 2006, Adams et al reported that 73% of surgeons choose polyglactin-910 (multifilament suture) followed distantly by poliglecaprone-25 (11%) and polydioxanone (5.5%) (monofilament sutures).[1] While there was no direct explanation, we surmise it was due to previous experience and cost. In recent years, there has been a price decrease in monofilament sutures, making this option more accessible.

Some theoretical advantages to monofilament sutures compared with multifilament sutures include a lower coefficient of friction and decreased risk for postoperative infection or inflammatory response due to their decreased capillarity when compared with braided multifilament.[2] Regan and Lawrence demonstrated that poliglecaprone-25 had a significantly decreased risk of suture extrusion when compared with polyglactin-910 and that the appearance of extruded polyglactin-910 sutures was more inflammatory and noticeable to the patient.[3]

Another benefit of monofilament sutures includes their ability to be employed as the sole suture material in closing defects that require both a subcutaneous and epidermal repair. Yag-Howard and Lavelle reported their experience with using poliglecaprone-25 alone and demonstrated excellent cosmetic outcomes, increased patient convenience, and cost savings of between $4 and $12 per surgery when using one package of poliglecaprone-25 compared with using one absorbable and one nonabsorbable suture.[4]

While more comparison studies need to be done between monofilament and multifilament sutures, we hypothesize that dermatologists are unaware of the nearly negligible cost differences between monofilament and multifilament sutures.

FIGURE 1. Perceived suture costs. Results of question 3 from the survey (Figure 2) indicate that most providers believe that monofilament sutures are more expensive than multifilament sutures.



MATERIALS AND METHODS

A cost analysis of suture prices commonly purchased at a large university-based practice, a medium sized multispecialty private practice group, a large private equity dermatology group, and a small private practice dermatology office was performed and average suture prices across these varied types of practices were calculated. Each price was compared with the lowest cost suture for each needle size, which in all cases was polyglactin 910 (Table 1). Afterward, an electronic 10-item survey (Figure 2) was distributed to members of the American College of Mohs Micrographic Surgery (ACMS) from September to October, 2019 using REDCap.[5]

Collected data were analyzed in Microsoft Excel. This study was granted institutional review board exemption from the Penn State Health Institutional Review Board.

RESULTS

A total of 89 of the 1527 (5.8%) members of the ACMS completed the survey. There was a fairly even distribution in terms of years of practice among responders. Overall, 55.1% believed that monofilament sutures are more expensive than multifilament (braided) sutures while 34.8% believed that monofilament and multifilament sutures are comparable in cost (Figure 1).

FIGURE 2. Suture pricing perception questionnaire.

Figure 2. Suture pricing perception questionnaire.

1.) How long have you been in practice?

1-5 years	6-10 years	11-15 years	>15 years

2.) When was the last time you evaluated the cost of the sutures?

Within the last 1-5 years	Within the last 6-10 years	More than 10 years ago

3.) Which of the following do you believe is true?
__Monofilament and multifilament sutures are comparable in cost
__Multifilament (braided) sutures are more expensive than monofilament sutures
__Monofilament sutures are more expensive than multifilament (braided) sutures

4.) What do you believe the relative cost is between Monocryl ® (polyglecaprone-25) and Vicryl® (polyglactin 910) suture?

a. ~3:1	b. ~2:1	c. ~1.5:1	d. ~1:1

5.) What do you believe the relative cost is between Biosyn™ (Glycomer 631™- monofilament) and Polysorb™ (Lactomer™ – multifilament braided) suture?

a. ~3:1	b. ~2:1	c. ~1.5:1	d. ~1:1

6.) What do you believe the relative cost is between PDS® II (polydioxanone) and Vicryl® (polyglactin 910) suture?

a. ~3:1	b. ~2:1	c. ~1.5:1	d. ~1:1

7.) What do you believe the relative cost is between Maxon™ (polyconate) and Polysorb™ (Lactomer™ – multifilament braided) suture?

a. ~3:1	b. ~2:1	c. ~1.5:1	d. ~1:1

8.) What do you believe the relative cost is between Prolene® (polypropylene) and nylon suture?

a. ~3:1	b. ~2:1	c. ~1.5:1	d. ~1:1

9.) What do you believe the relative cost is between Fast absorbing gut and Prolene® (polypropylene) suture?

a. ~3:1	b. ~2:1	c. ~1.5:1	d. ~1:1

10.) Do you consider suture cost when closing a wound?
__Yes ___No

TABLE 1.

Cost Analysis Data				
Absorbable Suture	**Average Cost of Polyglactin 910**	**Polyglactin 910***	**Polydioxanone***	**Poliglecaprone-25***
3-0	$5.17 (PS-1)/ $5.68 (RB-1)	1 (PS-1)/ 1.1 (RB-1)	1.42 (PS-1)	1.29 (PS-2)
4-0	$5.15 (P-3)	1 (P-3)	1.26 (P-3)	1.34 (PS-2)/ 1.39 (P-3)
5-0	$5.19 (P-3)/ $6.16 (PS-2)	1 (P-3)/ 1.19 (PS-2)	1.21 (P-3)	1.41 (P-3

*Ratio to polyglactin 910

The vast majority (81%) reported that they had evaluated their suture costs within the past 5 years. However, when asked a series of multiple-choice questions comparing the cost between commonly used multifilament and monofilament sutures, cumulatively, only 35.6% of the questions were answered correctly (questions 4-9 of Figure 2).

DISCUSSION

The results suggest that the vast majority of Mohs surgeons believe there is a significant difference in cost between monofilament and multifilament sutures, which in our experience is not necessarily true. Our cost analysis revealed that there is only a slight cost discrepancy between monofilament and multifilament sutures, owing to a decrease in the cost of monofilament in recent years. Certainly, there is variability in negotiated rates between large academic hospital-based institutions compared with large and small private practices.

Amongst other reasons, it can be speculated that this perceived cost disparity may be a contributing factor leading to multifilament suture being chosen for economic reasons despite the theoretical advantages of monofilament over braided suture. However, the vast majority of suture prices were relatively comparable between multifilament and monofilament. For example, in a practice of 1500 surgical cases per year, if each case utilized one pack of 4-0 P3 polyglactin 910 instead of 4-0 P3 poliglecaprone 25, the cost savings based on our pricing model would only equate to approximately $2000. While suture selection is multifactorial, this study suggests cost of monofilament sutures should not be a factor.

DISCLOSURES

The authors have no conflicts of interest to declare.

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