

Double gloving and surgical technique

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Key words: Surgical gloves; Operative surgery; Sensation

A comparison of double gloving *versus* single gloving was made with regard to its effects on tactile discrimination and dexterity in 17 surgeons of all grades and specialties. Surgeons were assessed by their ability to tie surgical knots, and Dellon's moving two-point discrimination test. Tests were performed single gloved, double gloved with the larger glove on the outside, and double gloved with the larger glove on the inside. Double gloving did not alter two-point discrimination or the ability to tie surgical knots in this study. Wearing the smaller glove on the outside of the larger glove was considered more comfortable than the conventional technique.

Double gloving is one of the measures used to reduce the risk of transmission of infection between patient and surgeon. Many surgeons are reluctant to double glove as they feel it may affect their tactile sensation and dexterity. While there have been reports on the effectiveness of double gloving in preventing needlestick injuries (1-3) and blood contamination (4,5), there seem to be no reports on the effect of double gloving on surgical technique.

The purpose of this study was to compare the effect of single and double gloving on the tactile discrimination and dexterity of surgeons.

Material and methods

The study group comprised 17 post-Fellowship surgeons of different grades and specialties. The tests consisted of two parts. The first part assessed moving two-point discrimination, as described by Dellon (6). The pulp of the dominant hand index finger was stroked 10 times, five times with a single point, and five times with two points set 1 mm apart. The score was recorded as the

number of times the surgeon correctly identified which method of stimulation had been used.

The second part assessed the surgeons' ability to tie knots. The score was recorded as the number of hand throws performed in 1 min. Scores for both 0 ties and 3/0 ties were recorded. Vicryl® (Ethicon UK) was used throughout the tests.

The group performed both tests three times: (a) With a single pair of gloves; (b) double gloved with the larger glove on the outside; (c) double gloved with the larger glove on the inside. The order in which the surgeons performed the tests was randomised using a computerised random number generator.

The technique was verified by asking four surgeons to be assessed on two separate occasions, and the results compared. The first author assessed all the surgeons.

As a separate, but related issue, each surgeon was also asked to assess the relative comfort of the two double gloving techniques during the tests.

Data were analysed using Wilcoxon's Rank Sum Tests.

Results

There was no statistically significant difference between the moving two-point discrimination and the number of knots tied in a minute, whether using a single glove or either of the double gloving techniques.

The four surgeons tested on separate occasions had comparable results.

Out of the 17 surgeons, 16 felt that wearing the large glove on the inside was more comfortable than the conventional method.

A summary of results is shown in Table I.

Discussion

Many reasons are given by surgeons for being averse to wearing double gloves. One is that sensation is reduced;

Table I. Summary of results

	Groups			
	A	B	C	
<i>Moving two-point discrimination*</i>				
Median	7	7	7	Groups A + B: <i>P</i> = NS
Range	0-9	0-10	0-10	Groups A + C: <i>P</i> = NS
<i>3/0 Ties†</i>				
Median	36	32	33	Groups A + B: <i>P</i> = NS
Range	24-41	18-42	14-42	Groups A + C: <i>P</i> = NS
<i>0 Ties†</i>				
Median	38	37	35	Groups A + B: <i>P</i> = NS
Range	24-48	23-48	22-49	Groups A + C: <i>P</i> = NS

* Correctly identified out of 10

† Number of throws performed in 1 min

another, and perhaps consequent upon the first, is that fine, manipulative skills cannot be performed with enough accuracy.

This study has quantified the effect of double gloving on these two aspects of surgical skill. The moving two-point discrimination test was chosen as a method of assessing tactile gnosis, or the ability to 'see' with the fingertips. Knot tying was chosen because it requires fine manipulative skill, is performed frequently during surgical procedures, and is easily reproducible.

The results suggest that wearing two pairs of gloves does not alter two-point discrimination, nor does it impair dexterity. Though it would seem illogical to do so, Regent, the glove manufacturers have recommended wearing the larger glove on the inside of the smaller glove. Of the surgeons studied, 16 felt that double gloving this way was more comfortable than the conventional method, and would adopt it for future use.

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Received 3 December 1992