SUTURES v STAPLES

More research needed

The meta-analysis of Smith and colleagues comparing sutures and staples for skin closure in orthopaedic surgery does not mention the density of the staples or whether the sutures were interrupted or continuous subcuticular or non-dissolving, slowly dissolving, or rapidly dissolving. Were sutures used to bring subcuticular fat together before skin closure? What was the ability and experience of the operators? Did the consultant close the wound, or was it left to the most junior member of the surgical team?

There are myriad causes of wound infection and methods of preventing infection. Let us hope that more work is done on wound closure methods before the inference of this meta-analysis, that sutures will reduce the incidence of wound infections, becomes gospel.

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Competing interests: None declared.


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Let’s add three other studies

The take home message of the meta-analysis by Smith and colleagues as broadcast in the media was that the risk of developing a wound infection after orthopaedic surgery is significantly higher when the wound is closed with staples rather than sutures. However, the meta-analysis does not support this conclusion.

Firstly, we found three new studies in a PubMed search that should have been included. All are randomised controlled trials comparing sutures with staples in orthopaedic wounds, and report the presence of infection. Smith and colleagues mention the study by Graham et al in their discussion but do not say why they excluded it and the other two studies. When we re-ran the meta-analysis including the three studies the increased infection rate for staples compared with sutures was not significant. The significant difference for the hip surgery sub-analysis was also lost.

Secondly, clinical heterogeneity is also substantial in this meta-analysis, such as variation in suture techniques (both transcutaneous and subcuticular), suture materials, follow-up, and assessment of infection. Thus the studies should not be pooled, even with a significant summary effect. The main reason for this heterogeneity is a lack of clarity in the research question.

Finally, the meta-analysis lacks a clear a priori design and a list of excluded studies. The overall methodological quality of the included studies is poor, as recognised by the authors, and so the conclusion of more infections when using staples is not justified. In addition, the authors do not discuss the presence and potential influence of publication bias on the results, although they provide a funnel plot.

The conclusion should have been: “definitive randomised trials are still needed to assess this research question.”

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Conclusions are uncertain

In their meta-analysis on sutures v staples for skin closure in orthopaedic surgery, Smith and colleagues give the relative risk of wound infection, rather than the absolute risk reduction, which is more relevant to clinicians. The absolute risk reduction when using sutures was 3.95%. The number needed to treat is 25, a useful statistic when comparing the merits of the two methods. More of the studies were not randomised, which was not highlighted in print. The largest study found only one infection in 158 patients, calling into question the consistency of the studies’ methods of diagnosing infection. For example, the prescription of antibiotics labels a wound as having been infected, when in fact it may not have been.

The lack of a difference between closure methods in the subgroup of patients undergoing knee surgery should be given more prominence as the overall findings of the study do not seem to apply to the knee.

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Competing interests: None declared.


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More methodological concerns

We were surprised that only six out of 195 papers (or 20 infections) were considered suitable for inclusion in the meta-analysis of Smith and colleagues on sutures v staples for wound closure. The papers selected are a mixture of trauma and elective orthopaedics. These are two heterogeneous groups, particularly when discussing infection incidence, and they should not be combined for statistical purposes.

The introduction explicitly describes the closure methods as “metal staples or nylon sutures” whereas the papers themselves include various absorbable sutures, which are well known to initiate foreign body type reactions. The results are significant only because of two papers.

The prospective, randomised, controlled trial of Khan et al had three groups: OCA (2-octylcyanoacrylate) skin adhesive, poliglecaprone sutures, and skin clips. The results in fact supported the use of staples. To take data selectively from a randomised controlled trial is methodologically flawed.
Shetty et al looked at hip surgery in patients with trauma. They grouped together all proximal femoral fracture surgery, without giving a breakdown by surgical procedure. The key point was that wound complications are related to the seniority of the surgeon. If this paper is to be included, the results should have been stratified by seniority or the paper not included in the analysis.

When we excluded these two papers, we found no significant difference between the two groups (P=0.17).

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1 Smith TO, Sexton D, Mann C, Donell S. Sutures versus staples for skin closure in orthopaedic surgery: meta-analysis. BMJ 2010;340:c11199. (16 March.)

Cite this as: BMJ 2010;340:c2630

**What about the NICE guidelines?**

Surprisingly, neither the editorial by Singh and Mcgarvey nor the associated paper by Smith and colleagues mentioned the recent guidelines on surgical site infection from the National Institute for Health and Clinical Excellence (NICE), particularly their conclusions and recommendations on using staples to close the skin.1,2

NICE identified 11 randomised controlled trials (n=1353) comparing the two closure methods across gynaecological, cardiac, orthopaedic, otorhinolaryngological, breast, and abdominal surgery. It concluded that there is evidence of no difference in the incidence of surgical site infection after use of staples or sutures (evidence level 1).3

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**Authors’ reply**

We agree with Dickson,4 and our review indicated several methodological limitations to the evidence base—for example, poor description of surgical techniques, operator skill, density of staples, and diagnosis of infection rates.5 Vochteolo and colleagues suggest a “lack of a priori design,”6 but this was in order to answer the research question on the basis of pragmatic study design principles.

Our study’s primary aim was to determine whether there was a different outcome depending on wound closure method.7 Although Ball questions whether the magnitude of this difference was important,8 the study is more relevant in questioning the previous notion that there was little difference in outcomes.

As Ockendon and colleagues infer,5 reviewers must not commit selection bias but ensure study homogeneity when defining the eligibility of studies. Although the orthopaedic index procedure may vary, we were selective in assessing only outcomes of orthopaedic surgery; the guidelines from the National Institute for Health and Clinical Evidence analysed pooled results for an array of different surgical procedures in various different patient groups.6

Systematic reviews must be able to demonstrate that all potentially relevant literature has been identified.1 However, electronic database searches can miss important papers.4 We thank Vochteolo and colleagues for pointing out three missed studies.3 We identified the study of Graham et al but omitted it from the review as its objective was to report wound oxygenation. Furthermore, none of the three studies used “randomised controlled trial” in the title or key words, which may explain why we missed them.

We agree that definitive, well designed randomised trials are still needed before considering changing clinical practice.

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1 Smith TO, Sexton D, Mann C, Donell S. Sutures versus staples for skin closure in orthopaedic surgery: meta-analysis. BMJ 2010;340:c11199. (16 March.)

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**BMJ’s suturing technique**

Had Singh and Mcgarvey chosen the cover illustration for the BMJ print journal of 3 April, it would be no surprise that they think stapling is quicker than suturing.1 Most of us find it quicker to suture with a needle holder rather than an artery forceps.

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Competing interests: None declared.


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**Some troubles with staples**

With reference to the meta-analysis of Smith and colleagues,1 skin stapling has many disadvantages:

- The cost of the disposable stapler and the disposable staple remover is much more than that of a suture
- To approximate the skin accurately using staples is tricky. Most wounds are not approximated, despite the initial appearance: one edge is usually dragged over the other by the staples. This “step” becomes apparent only after staples are removed and leads to a separation of the epithelial surfaces, which results in a wider scar, if not an infection
- Removal of skin staples is usually painful
- Staple removers are not always readily obtainable outside the operating theatre
- The preferred use of skin staplers by surgeons in training leads to a desklilling in the art of technically competent and cosmetically acceptable skin suturing, which in itself leads to a vicious circle of more stapling. The use of skin staples should be restricted to the more unusual situations. Time should then be taken to ensure correct skin alignment rather than a quick exit from the operating theatre.

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Competing interests: None declared.

1 Smith TO, Sexton D, Mann C, Donell S. Sutures versus staples for skin closure in orthopaedic surgery: meta-analysis. BMJ 2010;340:c11199. (16 March.)

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PULMONARY EMBOLISM

How important are asymptomatic emboli?

Meyer and colleagues highlight that pulmonary embolism is easily missed, but the number of unsuspected cases is increasing with improved detection methods such as computed tomography. How clinically important are these asymptomatic emboli?

In one retrospective study, a third of the 192 patients with sub-segmental pulmonary embolism did not receive anticoagulants; none of them had recurrent venous thromboembolism or died because of the clots. In another retrospective study of untreated sub-segmental emboli, untreated because the diagnosis had been missed, mortality from pulmonary embolism did not increase. These patients also had a favourable outcome at one year follow-up.

Prospective studies are urgently required before a definitive conclusion can be reached about treating unsuspected pulmonary embolism. Anticoagulant treatment of unsuspected major pulmonary emboli (saddle thrombi or major pulmonary artery thrombi) is of course crucial, but whether small peripheral emboli need blood thinning agents is debatable. The lung may be thinning agents is debatable. The lung may be damaged, but not to give anticoagulants to patients with sub-segmental pulmonary embolism (asymptomatic emboli) may do more harm than good.

We have had to move away from the standard quantitative auditing process towards a qualitative auditing process largely dependent on consultant input. We review "hot" (often <48 h) mortality data on patients who pass through the emergency department. We create a narrative around the patient journey, looking at the clinical decisions and reflecting on their justification. When we identify systematic failings (usually from the same themes recurring) we try to improve the system and undertake audit around this (usually at a more junior level). This qualitative process is consultant led, with quantitative audits being performed by middle grade and junior doctors.

And the impact? This hospital’s emergency admission rate has gone from 150 to 60 over the past two years. The emergency department drug spend has doubled and the medical assessment unit spend halved. Crude mortality is down, and standards in a national audit from the College of Emergency Medicine have improved significantly.

Life saving audit is sexy, and it can be qualitative as well as quantitative.

SEXING UP AUDIT

Lifesaving audit is sexy

Most staff in hospitals find saving lives “sexy,” and audit can be a major driver.

As junior doctors in various hospitals we performed audit on numerous occasions. It was dull, predictable, rarely resulted in significant change in practice, and was generally regarded as a morning off for us. As consultants in a heavily criticised department in a heavily criticised hospital we need good audit. We have looked to create a different system of clinically driven audit that has a direct impact on patient care.

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SPINAL INJURY

NHS spinal units

My experience of an NHS spinal unit mirrors closely that described by Sonksen and Hillier. I have a complete cord transsection at mid-thoracic level and was treated conservatively, which meant 14 weeks in bed, being log rolled etc, and several complications from such recumbency.

The rehabilitation staff, especially the physiotherapists, were vastly overstretched, and in general I got about one hour a day of physiotherapy—a group setting. I left hospital after eight months, my rehabilitation still far from complete, and only a couple of years later did I achieve my full potential. Some patients who were friends during my time in hospital were there for over a year.

Compare this with the US experience, with its “can do” attitude: most patients are discharged home from rehabilitation, within a few months of injury, and with greater functional ability. NHS units are almost certainly underfunded in comparison with their US counterparts, which probably explains much of the difference, although some of it may be a difference in philosophical approach.

With reference to mobility appliances, as a paraplegic patient, I was led to believe that a manual wheelchair was best for me, while those with tetraplegia need a power chair. Within a few years, however, most paraplegic patients who are active and use manual chairs develop severe shoulder problems that affect almost every activity of daily living. In reality, most paraplegic patients will eventually need a power chair, and to make them fund such appliances themselves is an indictment of our system.

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Competing interests: KC is a doctor with a spinal cord injury.

CLINICAL TRIALS DIRECTIVE

Age of autonomy

Does 7 being the age of autonomy always benefit the child? Not all children will demonstrate this capability so young, and so the person who decides whether a child is autonomous is important. Usually it is the consulting doctor, who may have never met the child before the consultation.

In a recent episode of Embarrassing Bodies (Channel 4, 7 April 2010), a child of 8 was told by a doctor whom they had seemingly never met before of the explicit risks entailed in a possibly...
life-saving procedure. Should the doctor have decided when and how the child was told these details? Or should the parents have decided?

I took my daughter, aged 7, for a swine flu vaccination as part of the UK children’s swine flu study. She was clearly told by the consulting clinician that the decision whether to participate in the study and have the vaccination was hers. She was then asked whether she would like the jab. She said no.

Last September my informed choice was to vaccinate my children by including them in this study. I explained my reasons to my daughter before taking her to the trial, and she had agreed that she wanted the jab. Could she make a more informed choice about whether the risks outweighed the benefits? This is what she was implicitly being asked when she was asked whether she wanted to participate. In fact, my daughter had no qualms about participating in the trial—to this day she wishes she had taken part—her only concern was the fear of the needle penetrating into her skin. This fear prevented her from seeing the bigger picture. Perhaps if she had not been asked to participate she would have had the injection swiftly like her 4 year old sibling.

Is it always in the child’s best interests to be considered autonomous so young?

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Competing interests: None declared.


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SPANISH TRANSPLANTATION MODEL

Money talks

Rafael Matesanz, director of Spain’s national transplant organisation, is quoted as saying that the Spanish transplantation model is a voluntary donation system based on altruism.3 No reference is made to its economic costs.

Drugs for patients receiving transplants now account for 10% of hospitals’ overall drug expenditure, according to the head of the hospital pharmacy service in Valencia.

Organ transplantation is financially incentivised: tissue donor detection teams receive €306.52 for each heart valve extracted and €1 190 for each multi-organ donor detected. It has been argued that abolishing these incentives would harm the programme because it risks demotivating teams.3

The transplant operations themselves incur costs, with transplant surgeons receiving salaries that are 1.5–2 times higher than those of other surgeons.

So the Spanish model depends not only on altruism but also on high drug spending and financial incentives to staff.

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Competing interests: The authors declare that they are whole organ donors.

1 Rada AG. Spanish transplant model would save 20 000 lives a year in EU. BMJ 2010;340:c1758. (29 March.)


Cite this as: BMJ 2010;340:c2520

TWO TIER HEALTH SYSTEMS

ISTCs are not on the radar

With other doctors, I have been developing services that deliver day case surgery (24–48 hours in hospital) for patients requiring major bowel surgery. These developments have been stimulated by our interest in providing optimum care for patients—in short, what we would want ourselves or for our families.

Listening to friends who are managers of primary care trusts, I conclude that independent sector treatment centres (ISTCs) can create emergencies out of routine cases.1 Patients are listed for surgery by a consultant in an NHS acute trust and are then persuaded by the primary care trust to have their surgery done within a few days in the ISTC which already has the block contract money for doing the work. The patients move off the trust’s waiting list and are seen in the ISTC. However, a significant proportion of them do not meet its criteria for, say, body mass index, and so leave without surgery.

These patients then have nowhere to go, having lost their waiting list slot, yet they move towards their breach date on the 18 week pathway. To avoid this, they are not infrequently sent to the local private hospital for managerially urgent surgery that costs more than the tariff rate.

The market premise on which ISTCs were founded does not acknowledge how progress is made in the NHS—by aligning clinicians’ research interests with the longer term needs of the service. If the introduction of competition and an artificial market is necessary to motivate NHS managers, then perhaps the management culture should be examined and aligned more with the needs of patients.

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Competing interests: CLG is a former specialty director for day case surgery in an NHS trust. He is currently involved in an enhanced recovery programme for NHS patients having major colorectal surgery.

1 Guadagno JV, Polman CH. A Dutch window into the development of a two tier healthcare system. BMJ 2010;340:c2330. (28 April.)

Cite this as: BMJ 2010;340:c2644

GMC FITNESS TO PRACTISE PANELS

Justice for all

Why did the General Medical Council have to be forced to disclose documents about its handling of a case involving a lay panel member banned from hearing professional conduct cases after failing to disclose links with scientology?2 This secrecy and reluctance does the GMC no favours. And why are lay panellists treated differently from the doctors they sit in judgment on, who can expect very public revelation of their misdemeanours?

The GMC appoints panellists autonomously and should take the blame when its choice incurs extra expenditure. A day’s hearing at the GMC costs a minimum of £10 000 for each side. In this episode there was also the cost of reviewing further cases, which could have been mitigated by earlier public disclosure of the unsuitable lay member.

The GMC argued at the information tribunal that it was not in the public interest to disclose. It may not be in the GMC’s immediate interest, but it is in the interest of those who may be affected, which is presumably why the GMC is writing to all the lawyers in other cases.

A lot of money has been squandered on this affair without being discussed by GMC council, so far as I can see from the minutes. The council is under a duty to see that the money under its control is spent wisely. Subscribers’ fees have also been spent in trying to prevent subscribers finding out how their money has been wasted.

Has the GMC learnt anything from this? We certainly have.

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Competing interests: OD is in receipt of a warning from the GMC for drink driving. He was advised not to appeal through the fitness to practise process as an ex-panel opined: “Everyone knows you don’t get a fair hearing.”

1 Dyer C. GMC panelist was banned for not disclosing links with Scientologists. BMJ 2010;340:c1766. (30 March.)

Cite this as: BMJ 2010;340:c2651