British Society for Dermatological Surgery
Undergraduate Essay Prize 2015

"There is no need to treat any skin cancer with Mohs surgery - discuss"

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The late 20th and early 21st century has been an age of rapid medical and technological change. This is also true of surgery, where standard practice has evolved to meet rising patient expectations. Every surgical procedure must stand up to scrutiny in the cold light of our ever-increasing evidence base. Elaborate techniques requiring unique surgical skill are being replaced by more efficacious and efficient practices that reduce surgical trauma, shorten hospital stay and improve long-term patient outcomes. It is all the more remarkable, therefore, that Mohs micrographic surgery (MMS), a procedure that has changed very little since its inception a few years before the start of the Second World War, is still the go-to treatment for many forms of skin cancer. Has Mohs lasted the test of time for a reason, or is there no real need to treat any skin cancer with this approach?

Is Mohs Effective?

MMS is often indicated in nonmelanoma skin cancer and is most commonly used for large and high-risk basal cell carcinomas (BCC) of the face and neck.[1] BCC is the most common cancer among Caucasians, with its incidence rising year on year.[2,3] It also has a very high recurrence rate on the head and neck,[4] so it is imperative to find a treatment that is both safe, effective and fiscally justifiable within an increasingly resource-constrained NHS. MMS involves resecting the lesion and cutting the specimen into horizontal sections, ensuring that all cancer margins have been removed. The Mayo Clinic defines this process to be where *"…layers of cancer-containing skin are progressively removed and examined until only cancer-free tissue*

remains".[5] The theoretical advantage of this method over surgical excision (which slices the specimen vertically) is that more healthy tissue is spared and there are fewer recurrences. MMS has indeed been shown to be safe, with a vanishingly low rate of major complications,[6,7,8] and has a remarkably low recurrence rate,[9] with most 20th century literature suggesting a 99% 5-year cure rate for BCC.[10]

It could be argued, however, that recent systematic reviews[11,12] suggest that current evidence for the efficacy of MMS is poor and that there is a lack of prospective studies justifying the use of MMS compared to simpler, cheaper and very effective treatments such as surgical excision. Despite this scepticism, however, recent prospective evidence does confirm the superiority of MMS over standard surgical excision. The results of a 10-year follow-up of a randomised control trial in the Netherlands comparing the two methods, published in September 2014,[13] show a 9.6% difference in 10-year recurrence rates in recurrent BCCs between MMS and surgical excision. The study also showed that more than half of recurrences occur after 5 years post-surgery, confirming the need for long-term follow-ups.

It is important to note that whilst BCC is the primary disease discussed due to its prevalence and coverage in the literature, MMS is still the first line treatment for other nonmelanoma skin cancers such as squamous cell carcinoma[14,15] and rare skin lesions such as dermatofibrosarcoma protruberans.[16] A recent systematic review and analysis of existing studies on the use of MMS for squamous cell carcinoma shows that there is a deficiency

in the quantity (with no randomized control trials comparing MMS to other treatments) and quality of the available literature.[17] Overall, current available evidence shows that Mohs is the gold standard in terms of healthy tissue preservation, morbidity and recurrence rates.

Is Mohs Cost Effective?

Even if evidence proves that MMS is more effective than other interventions in terms of recurrence rates and skin preservation, in an NHS facing increasingly complex financial decisions with a limited budget, is Mohs surgery a need or a luxury? Is the increase in efficacy justified by the increased opportunity cost (the loss of other alternatives when one alternative is chosen[18])? Mohs surgeons in the USA have recently been accused of overusing the treatment because of its high remunerative potential[19] and whilst the situation is very different in the UK, there is some public scepticism over surgeons' justifications for using the treatment. Most of the cost-effectiveness and cost-utility analysis has been carried out in the USA. Whilst many of the studies show that Mohs is cost effective,[20,21,22] there is also evidence suggesting no difference between MMS and traditional excision,[23] Furthermore, one European study showed MMS to be less cost-effective.[24] Translating these studies from private clinics that often have the surgeon also acting as pathologist to the public healthcare model of the NHS also makes comparison very difficult. There are, however, several reasons that suggests that in certain cases Mohs may be cost effective in the UK:

1. The new data on 10-year recurrence rates[13] suggest that MMS could be cost-effective in the long-term when considered as part of a whole-life cost. It is not only the immediate surgical costs that are important, but also future costs as patients may need subsequent procedures.
2. Mohs surgery involves smaller reconstructions and flaps and therefore damages less healthy tissue than surgical excision. This results in reduced iatrogenic morbidity and complications as well as fewer recurrences.
3. A reduction in short and long-term morbidity will also increase productivity for those in work.
4. On a Trust level the surgery can be kept ‘in house’, with fewer external costs and referrals.[25]

On balance, it is not yet possible to tell whether MMS is cost-effective in the UK but it is reasonable to infer that in certain cases the procedure does justify its use of resources. It is evident that a cost-effectiveness analysis comparing MMS to surgical excision (and indeed other interventions for nonmelanoma skin cancer) in the NHS is needed.

Case Study

Although the plural of anecdote is not data, the following case study observed in hospital by the author shows how these randomised control trials, systematic reviews and cost-effectiveness analyses, whilst seeming dry and academic, could make a real difference to the lives of individuals:

Mr J is a 65 year-old retired builder who was referred to a Mohs surgeon by his GP, who diagnosed a basal cell carcinoma (BCC) in the concha of his right ear. Mr J was first diagnosed with a BCC at the same location 6 years ago and it was removed using surgical excision. It recurred two years ago and, even after a second surgical excision, has recurred again, prompting the referral. On examination, the antitragus and antihelix of the right ear were scarred and reduced due to previous excisions and a shiny, nodular lesion was observable in the area of the concha and entrance to the auditory canal. Mohs micrographic surgery, with the help of ENT surgeons for reconstruction, was undertaken and pathology revealed that the cancer had infiltrated to the tympanic membrane. Complete resection of the margins, therefore, resulted in Mr J losing his hearing in his right ear.

This case study highlights the importance of eliminating all roots of the cancer during surgery to prevent recurrence. If Mohs surgery had been conducted after the initial diagnosis of BCC 6 years ago, there would have been a lower chance of the cancer recurring and less tissue would have been damaged. The NHS would have saved time and money and Mr J would still have his hearing.

Conclusion

In order to assess the argument ‘there is no need to treat any skin cancer with Mohs surgery’, the word ‘need’ must be defined and answered. For there to be a need to treat cancer with Mohs in the NHS, three proposed criteria must be fulfilled:

1. The problem must be important and urgent;
2. Mohs must be the most clinically effective treatment available; and
3. Mohs must be cost-effective.

Nonmelanoma skin cancer is very common in the UK and its incidence is forecasted to rise, presenting increased challenges to national health. The most recent literature strongly suggests that Mohs is significantly more clinically effective than other interventions, including surgical excision. It spares more tissue than surgical excision and is more effective at reducing recurrence rates and morbidity than any other intervention. In the NHS, how well Mohs meets the third criteria (cost-effectiveness) is less clear. Due to the uncertainty over cost-effectiveness, Mohs should be limited to the procedures in which it is particularly indicated (for example infiltrative BCCs or very large tumours). On balance, Mohs currently meets these criteria in a way in which other interventions do not. The evidence base clearly needs more long-term follow up of prospective studies of the effect of Mohs on BCCs and other cancers such as squamous cell carcinoma, of which there is a worrying paucity of data.

In light of both the best available evidence and the experiences of patients and surgeons alike, there is currently every need to treat certain

cancers with Mohs surgery. The technique that has stood the test of time for 80 years may well continue to lead the way for the next 80.

Word Count: 1,477

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