Surgical safety issues for patients with cochlear implants

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Introduction

Although the first cochlear implant was inserted into a living human as recently as 1957, the technology has rapidly advanced over subsequent decades. This has enabled the mass production of reliable devices that can make a significant improvement to recipients’ quality of life. In the UK, careful patient selection against National Institute of Clinical Evidence (NICE) guidance ensures that most implant recipients achieve better hearing results than they did with their hearing aids at optimal gain. 70% of recipients are even able to undertake a telephone conversation using their implant despite the fact that the nature of the sound percept is significantly different to that in a natural ear.

By the end of 2010 there were 219,000 users worldwide and in 2011 there were 11,000 users in the UK. As cochlear implantation becomes available more widely throughout the world we expect the number of implanted recipients to continue to rise. Even in a developed country such as the UK where implantation is available to suitable candidates via the National Health Service (NHS) without cost at the point of delivery only a small fraction of all severely profoundly deaf individuals (0.08%) are implanted each year. As technology continues to advance patients with less severe audiological deficits will no doubt be shown to potentially benefit from implantable electronic devices and the size of the implanted population will grow further.

Both monopolar and bipolar surgical diathermy can be damaging to implant electronics and guidelines have been produced by the British Cochlear Implant Group (BCIG) regarding their use (see box opposite). Although patients at our centre are routinely issued with these guidelines, awareness of their existence and content amongst many surgeons operating in the head and neck region is poor. There is currently therefore a dependence on patients (or if young, their parents) to draw surgeons’ attention to the risk of diathermy. One method of ensuring that the information is relayed may be to provide a link to this information on the implant ID card that patients are given when implanted.

Methods

A questionnaire was distributed to 50 adult implant recipients, and the parents of 50 paediatric implant recipients registered at the South of England Cochlear Implant Centre.

Results for adults

• 70% of adults responded.
• 86% of these still possess their implant ID card.
• 71% carry it with them at all times.
• 54% recognize that non-implant surgeons might be unaware of the diathermy guidelines.
• 3% have undergone surgery since implantation.
• 77% of adult patients, having completed the questionnaire, felt certain that in future they would show their implant ID card and raise the diathermy issue with their surgeon.

Results for children

• 50% of parents responded.
• 84% are confident that they still possess their implant ID card.
• 76% believed that non-implant surgeons would be unaware of the diathermy guidelines.
• 12% had undergone surgery since implantation.
• Although all of the 12% informed the surgeon that their children had implants, none of them showed their ID card nor highlighted to the surgeon the risks of diathermy.
• 75% of this 12% felt insufficiently informed regarding diathermy to discuss the matter with their surgeon.

Conclusion

Surgical diathermy poses a significant risk to cochlear implant recipients, with potential to cause potentially irreversible damage to the remaining hearing mechanism or device failure necessitating re-implantation. For the safety of an expanding population of cochlear implant users, awareness of the risks of diathermy must be raised both amongst surgeons and patients, and a more robust system of directing surgeons to practical advice must be developed.

Options include encouraging more widespread use of the implant ID cards by patients and ensuring that they display links to more practical information for surgeons.

References

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www.soecic.org
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