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The involvement of caregivers of patients with dementia during mastoid surgery under local anaesthesia

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Short Communication

Mr S Patil takes responsibility for the integrity of the content of the paper

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Abstract

Background. With a growing ageing population, there is a higher prevalence of dementia in patients with conditions that can be managed surgically. Patients with dementia undergoing surgery under general anaesthesia often have poorer outcomes than those without. Therefore, local anaesthesia can be an option.

Methods. Two patients with severe dementia and advanced cholesteatoma were identified for operative management. They were deemed too high risk to proceed with general anaesthesia. This article describes our experience of performing mastoid surgery under local anaesthesia in the presence of a primary carer in the operating theatre.

Results. The complete extirpation of cholesteatoma was achieved in both cases. The carers reported that local anaesthesia helped to facilitate communication and aid patient co-operation.

Conclusion. Our experience, albeit limited to two cases, illustrates an alternative individualised peri-operative strategy in the surgical management of patients with dementia and concurrent advanced cholesteatoma.

Introduction

With a growing ageing population, more patients suffering from dementia are presenting for elective surgery. This calls for specific attention to a variety of dementia-specific issues.[1]

Mastoid surgery for advanced cholesteatoma can be performed under general or local anaesthesia.[2] Mastoid surgery performed under local anaesthesia requires patient co-operation. Unfamiliar environments may contribute to anxiety in patients with dementia and efforts should be made to minimise this.[3] The 2019 Association of Anaesthetists guidelines advocated that carers and relatives should accompany a person with cognitive impairment before and after surgery, as they provide invaluable patient support.[4]

At our unit, two patients with advanced cholesteatoma and severe dementia were identified who could be managed surgically. Given their dementia and co-morbidities, the anaesthetist deemed that the general anaesthesia risks were high. With the aforementioned peri-operative guidelines in mind,[4] it was proposed that surgery could be performed under local anaesthesia with the involvement of a dedicated caregiver in the operating theatre. This article describes our experience.

Materials and methods

Two patients with advanced cholesteatoma and severe dementia underwent ear surgery. As the formal dementia diagnosis had been made by the elderly care team, it was deemed unnecessary to repeat cognitive score measurements.

After discussion with the patient's family regarding the risks of cholesteatoma and the distress that the symptoms were causing, it was deemed appropriate to proceed with mastoid surgery performed under local anaesthesia, with knowledge of the low risk of complications from surgery. The possible complications included profound ipsilateral hearing loss, balance disturbance and facial palsy. It was judged, in agreement with the family, that the symptom-related distress outweighed the distress of the procedure, with the knowledge of the potential negative outcomes from surgery. The consent form 4 was used in both cases. This consent form is used for adults who lack the capacity to consent to investigation or treatment.

The primary caregivers were briefed on the peri-operative journey, particularly the intra-operative experience. They were given a tour of the operating suite beforehand to familiarise them with the operating theatre suite and set-up. In addition, on the day of the procedure, operating theatre staff members were allocated to the caregiver to look after their wellbeing.

Based on past experience of managing otological cases under local anaesthesia where general anaesthesia was contraindicated or considered high-risk, both the senior authors

(SP and MY) were confident in managing these cases if the patient became agitated or unable to tolerate the procedure. However, an anaesthetist was on standby for the duration of the procedure, ready to act if the patient were to become agitated or unable to tolerate the procedure after commencement.

For each case, one caregiver, well known to each patient, was asked to be present during surgery. The caregiver and patient were counselled pre-operatively. The carer sat at eye level adjacent to the patient such that they were visible to the patient at all times (Figure 1). The carer acted as the communicator between the patient and the surgeon. The surgeon did not directly address the patient.

The technique for infiltration of local anaesthesia (lidocaine 2 per cent with adrenaline 1:80 000) and positioning was previously published in a description of mastoid surgery for patients with multiple co-morbidities.[2] Sedation was not used. Complete extirpation of cholesteatoma was achieved in both cases. The surgical findings and techniques for both cases are described below, in the relevant patient subsections.

Six to eight weeks post-operatively, caregivers were engaged in telephone interviews. The first author explained the aims and objectives of the study. The carers were asked to narrate their experiences. The interviews started with the following question: 'Please describe your father/patient's experience of undergoing local anaesthetic ear surgery'. The carers spoke freely and were only interrupted where clarification was required.

Case reports

Patient one

An 89-year-old man was referred with a chronically discharging left ear and dizziness. He had a past medical history of moderately advanced Alzheimer's disease, hypertension, congestive cardiac failure and aortic stenosis.

An audiogram indicated left-sided moderate-to-profound mixed hearing loss and right-sided high-frequency moderate-to-severe hearing loss. Pre-operative computed tomography (CT) illustrated scutum erosion, facial canal dehiscence and probable lateral semi-circular canal dehiscence.

The management options discussed were: (1) regular or six-weekly visits to the ENT clinic for reassessment and suction clearance, if required; and (2) surgery that aimed to provide an infection-free dry ear and prevent the potential complications of ear disease.

In light of the advanced CT findings and otovestibular symptoms, surgery was proposed. Upon the patient's daughter's endorsement of the proposed plan, the patient was scheduled for ear surgery under local anaesthesia. The consent form 4 was signed.

Intra-operatively, an endaural approach with a front-to-back Bondy's mastoidectomy procedure was performed. Attic cholesteatoma was found extending into the antrum and mastoid. The posterior canal wall was eroded. The patient was discharged home the same day as the operation. There were no post-operative complications.

Patient two

An 82-year-old man was referred with occasional dizzy spells and a persistently discharging right mastoid cavity. Four years previously, he had undergone right-sided modified radical mastoidectomy at a different hospital. Since his original surgery, his memory had deteriorated and he was diagnosed

Fig. 1. Set-up of the operating theatre demonstrating the relative positions of the patient, carer and surgeon.

with vascular dementia. He had a past medical history of type II diabetes mellitus, peripheral neuropathy, recurrent falls and mild frailty.

An audiogram indicated bilateral moderate-to-severe mixed hearing loss. Pre-operative CT suggested lateral semi-circular canal thinning (Figure 2) and dehiscence of the facial nerve canal.

Similar to the first case, conservation and surgical management options were discussed. With progression of the disease and symptoms, surgery was proposed. The patient's daughter, who was a community nurse herself, was his primary caregiver. She approved of the plan and agreed to be present

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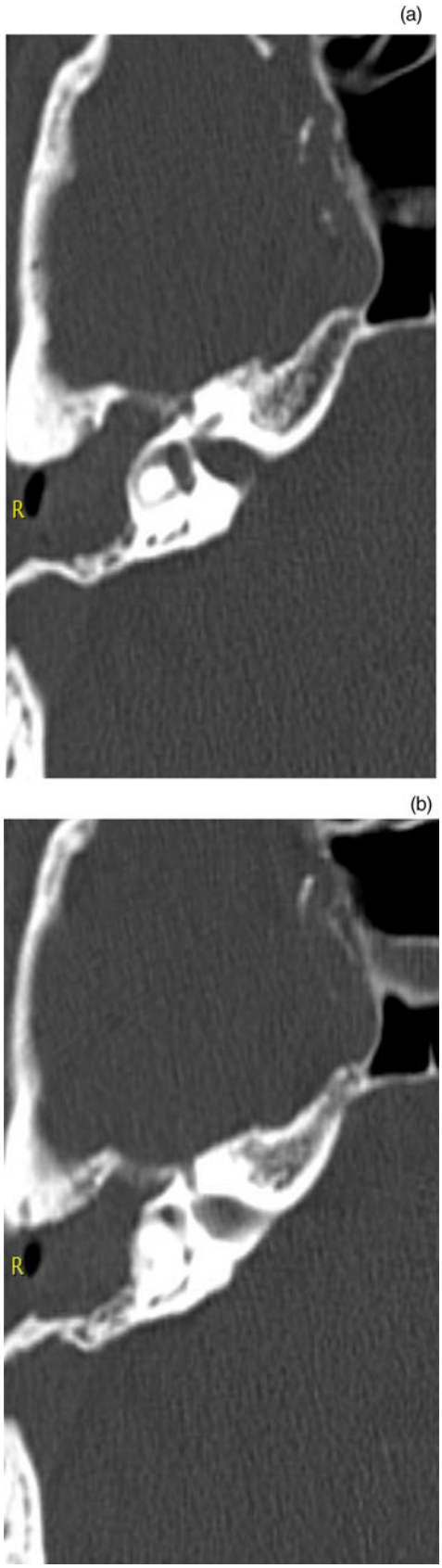

Fig. 2. Pre-operative computed tomography images demonstrating possible lateral semi-circular canal dehiscence. R = right

during the operation performed under local anaesthesia. The consent form 1 had been signed in advance; however, due to a deterioration in cognitive status, on the day of surgery the consent form 4 was signed.

A revision mastoidectomy and obliteration procedure, using hydroxyapatite granules and a mid-temporal flap, was performed. Intra-operatively, there was extensive granulation and cholesteatoma within a small mastoid cavity, and a 2 mm lateral semi-circular canal fistula (the membrane was intact). The fistula was covered with bone dust and perichondrium. The patient was discharged home the same day as the operation. There were no post-operative complications.

Results

As only two patients underwent this technique, formal thematic analysis was not possible. Analysis was conducted as follows: the verbatim-transcribed narratives were read several times to comprehend the narrative context. Topics that represented areas of particular importance or concern were identified. These topics were compared between the interviews to identify common ideas. Three primary topics were identified during the interviews: motivation, reassurance and communication, and quality of life. The results are summarised in Table 1.

In terms of motivation for considering surgery, the narrated events illustrated that the carers had two main concerns pre-operatively: the risks of general anaesthesia in patients with dementia and the severity of otological disease. These factors were important in their motivation for considering surgery. As anticipated, the local anaesthesia technique provided reassurance for the patient. An unexpected benefit was that the caregivers reported finding the experience beneficial personally as they were not worrying in the waiting room.

Pre-operatively, both patients reported otological and vestibular impairments, which were negatively affecting their quality of life. The likely link between the ear disease and symptoms was carefully explained to patients and their caregivers with the aid of illustrations. Post-operatively, there was no significant deterioration in the patients' mental state or post-operative delirium.

Table 2 summarises suggestions made by carers to help prepare future patients.

Discussion

Dementia is an age-related clinical syndrome characterised by progressive cognitive decline. In the UK, approximately 850 000 people have dementia.[4] This figure is expected to reach one million by 2025. Surgeons need to be aware of the anaesthesia considerations when scheduling patients with dementia for surgery, alongside the options that are available in their sub-specialty, to enable optimal patient care.

General anaesthesia considerations

Patients with dementia present a number of challenges for anaesthetists.[5] These challenges can be considered in terms of pre-, intra- and post-operative issues. Pre- and intra-operative considerations are discussed in detail in a variety of publications on anaesthesia,[1,4–6] and further discussion is beyond the scope of this article.

Post-operatively, several studies have shown that general anaesthesia can increase the risk of post-operative cognitive decline and delirium.[7] Post-operative cognitive decline describes a significant deterioration in comparison with pre-operative cognition, occurring between 7 days and 1 year post-operatively.[4] In contrast, post-operative delirium is a fluctuating disturbance that develops over a short period of time

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Table 1. Summary of topics gleaned from carer interviews

Topic or key concern	Comments from carers
Motivation	
– Risks of general anaesthesia	'I was concerned about the effect of general anaesthetic surgery on my father's mental state because of his dementia'
	[The benefit of surgery under local anaesthesia] was the 'proper thing to do to save a general anaesthetic'
– Severity of otological disease	'I wanted him to have the operation because of the effect of his wet ear'
Reassurance & communication	
– For patient	'I liked that the surgeon asked me the question & then I asked my dad. It was very personal'
	[He] 'often lip-reads, so it was important he was looking at me'
	[The process] 'provided reassurance & "a familiar face"'
	'He was very happy that I was in the operation. For the next couple of days after the operation he couldn't stop saying thank you'
– For caregiver	[It was useful to] 'know what was happening & be there to reassure him'
	'The experience was not intimidating but if you were squeamish you probably wouldn't want to go in'
Quality of life	
– Short-term	'There was no change in his mental state following the operation'
	'He had forgotten elements of his routine, but he still recognised people & possessions around him. He returned to his normal self after one week, compared to a recent hospital stay with pneumonia where he never returned to how he was before'
– Long-term	'Attending clinic was no problem'
	'It has improved his quality of life & is just one less thing to worry about now'

Table 2. Suggestions made by carers to improve process for future patients

Context	Comment	Suggestions
Pre-operative preparation	'I didn't know what the theatre would look like'	Photograph of operating theatre set-up, to help patients & carers visualise & prepare for surgery
Patient selection	'Dementia affects everybody differently & some people get angry. [This procedure] might not be suitable for everybody'	Ensure appropriate carer & patient selection at pre-operative stage
Staff	'I did not know what [parts of the sterile field] was safe to touch'	Named staff member to specifically help carer & alleviate anxiety

(hours to days) as a direct physiological consequence of surgery.[4] It may be associated with a prolonged length of stay, mortality and onward cognitive decline.

Local anaesthesia considerations

Regional anaesthesia is recommended by the Association of Anaesthetists to reduce opioid requirements, unless it is contraindicated.[4] However, locoregional anaesthesia can be challenging in patients with dementia, who may be unable to co-operate with the procedure requirements. A qualitative study of cataract surgeons highlighted concerns regarding the potential lack of a patient's co-operation and comprehension associated with cognitive impairment.[8] Sedation is one option to reduce anxiety; however, it has been demonstrated that sedation can have a detrimental effect on elderly patients with dementia.[9]

A survey of 108 patients who underwent otological surgery under local anaesthesia indicated that discomfort included noise, anxiety and dizziness.[10] Some of the aforementioned discomforts, alongside being in an unfamiliar environment, may be distressing for patients with dementia.

The two cases presented suggest that these concerns may be minimised by the presence of a carer during surgery. The patients received additional reassurance and familiarity to contribute to a calmer patient. The perceived advantages also facilitated communication between the surgeon and patient. We propose that a similar technique could be adapted and used in other surgical specialties.

Surgery performed under local anaesthesia, particularly in patients with dementia, requires co-ordination of the operating team.[2] The environment should be quiet, and the medical display screen should be obscured from the patient and carer. There is a need for sterile draping, but it is important to avoid claustrophobia by keeping the patient's face uncovered. The carer's needs should be anticipated, and it would be ideal for a designated member of staff to sit near to the carer to allow them to ask questions without disturbing the surgeon. Feedback from these two cases suggested creating a leaflet with a photograph of the operating theatre layout, to prepare patients and caregivers.

Patient selection

Not all patients with cholesteatoma and dementia require operative management. Patients, particularly those with dementia, need to be managed in a manner appropriate for

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their condition(s), and the surgeon must be cognisant of the potential negative impact of surgery (even that performed under local anaesthesia) on mental status. In those patients with advanced ear disease who are undergoing surgery, the presence of a caregiver in the operating theatre is a potential solution.

Caregiver selection is also important, to ensure a good patient–carer relationship, and prevents a carer being overwhelmed by the operating theatre environment.

Conclusion

Operating surgeons should be cognisant of the impact of dementia on disease, and of all management options including surgical options. Otologists should not disregard patients for mastoid surgery based upon a diagnosis of dementia; rather, there is a need to be patient advocates. Selected patients, in multidisciplinary consultation with relatives, caregivers and anaesthetists, can undergo surgery in the presence of a familiar carer. Opportunities exist to improve patient care through a more targeted, personalised approach. Further studies, with larger numbers of cases, are desirable, to confirm the feasibility of incorporating a caregiver into the operating theatre environment.

Competing interests. None declared

References

1 Funder KS, Steinmetz J, Rasmussen LS. Anesthesia for the patient with dementia. *J Alzheimers Dis* 2010;**22**:129–34
2 Neumann C, Yung J, Carroll PH. Mastoid surgery under local anesthesia for medically unfit patients: techniques and outcome. *Ann Otol Rhinol Laryngol* 2013;**122**:613–18
3 Waller S, Masterson A. Designing dementia-friendly hospital environments. *Future Hosp J* 2015;**2**:63–8
4 White S, Griffiths R, Baxter M, Beanland T, Cross J, Dhesi J *et al.* Guidelines for the peri-operative care of people with dementia: guidelines from the Association of Anaesthetists. *Anaesthesia* 2019;**74**:357–72
5 Alcorn S, Foo I. Perioperative management of patients with dementia. *BJA Educ* 2017;**17**:94–8
6 Hu CJ, Liao CC, Chang CC, Wu CH, Chen TL. Postoperative adverse outcomes in surgical patients with dementia: a retrospective cohort study. *World J Surg* 2012;**36**:2051–8
7 Mason SE, Noel-Storr A, Ritchie CW. The impact of general and regional anesthesia on the incidence of post-operative cognitive dysfunction and post-operative delirium: a systematic review with meta-analysis. *J Alzheimers Dis* 2010;**22**:67–79
8 Jefferis J, Clarke M, Taylor J-P, Brittain K. Challenges for the cataract surgeon treating people with dementia: a qualitative study exploring anesthetic choices. *Clin Ophthalmol* 2014;**8**:1993–9
9 Sugimura M, Kudo C, Hanamoto H, Oyamaguchi A, Morimoto Y, Boku A *et al.* Considerations during intravenous sedation in geriatric dental patients with dementia. *Clin Oral Investig* 2015;**19**:1107–14
10 Yung MW. Local anaesthesia in middle ear surgery: survey of patients and surgeons. *Clin Otolaryngol Allied Sci* 1996;**21**:404–8

https://doi.org/10.1017/S0022215121003194 Published online by Cambridge University Press