



Undergraduate teaching in an oral surgery day case unit

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Abstract

Objective: To examine the immediate post-operative morbidity experienced by patients following dento-alveolar procedures on a day-case basis when student operators are involved. **Design:** Single centre prospective study. **Setting:** Oral Surgery Day Case Unit. **Subjects:** One hundred and six patients underwent surgical removal of third molar teeth. Under supervision of an experienced operator, 55 undergraduate dental students removed a unilateral lower-third molar tooth and the contra lateral third molar teeth were excised by the experienced operator (student/staff operators). A comparative group of 51 patients were operated on entirely by experienced operators. There was no significant difference between the levels of tooth eruption and types of impacted teeth removed in either group. **Results:** The median operating time for the student/staff operator group was 30.0 (range 10–60) min, compared with 20.0 (range 5–55) min for experienced operators. Four patients experienced post-operative nausea and vomiting in the student/staff operator group compared with one in the experienced operator group. Post-operative analgesia was requested in the student/staff operator group at 23.0 (range 0–100) min and in the experienced operator group, 30.0 (range 0–80) min. Seventy-eight percent of patients in the student/staff operator group suffered moderate/severe pain immediately after surgery compared with 59% of patients treated by experienced operators. Six patients in the student/staff operator group suffered temporary lingual nerve anaesthesia, which resolved within 2 weeks after surgery compared with none in the experienced operator group. **Conclusions:** The concept of monitoring clinical outcomes in relation to under-graduate teaching is important. In the immediate post-operative period, student operators increase post-operative morbidity experienced by patients undergoing oral surgical procedures. Four patients in the student operator group suffered greater post-operative morbidity compared with one in the experienced operator group. In the day case setting, with careful case selection of patients, an environment can be created where patient throughput can be valuable for one-to-one teaching. © 2001 Elsevier Science B.V. All rights reserved.

Keywords: Undergraduate; Teaching; Oral surgery; Day surgery

1. Introduction

A considerable number of patients who require minor oral surgery are referred for treatment under general anaesthesia on an ambulatory basis. The majority of these patients, however, are managed under local anaesthesia supplemented with sedation. Greenwood et al. reported that a significant number of oral surgical procedures involving routine dento-alveolar surgery were still undertaken on a day case basis [1]. Day surgery is recognised as an area for expansion and development by the Royal College of Surgeons and the

Audit Commission [2,3] and the educational benefits of a Day Unit include the provision of a steady flow of case material, which provides not only a repetitive and concentrated opportunity to demonstrate surgical techniques, but also a place where hands-on experience can be gained rapidly.

This study was undertaken to examine whether immediate post-operative morbidity was altered when student operators were given surgical teaching on patients undergoing day case surgery (student/staff operators). To compare adverse outcomes following third molar excision, a similar comparative group of patients were treated entirely by staff (experienced operators). Day surgery units are unique in that patient assessment and diagnosis along with surgical procedure and recovery can be taught on the same day. Not only is there an

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emphasis on clinical skills training, but other key aspects of day surgery such as, selection of patients, anaesthesia and analgesia are emphasised utilising a multi-disciplinary teaching team. For patients who require treatment in a hospital setting, dental schools like medical schools are having to adapt their teaching in response to the reduction in inpatient availability and the increase in outpatient and community care [4]. Medical education needs to adapt to these changing patterns of health-care delivery [5,6], and day surgery centres can be used successfully to teach medical and dental undergraduates.

2. Aims of study

1. To assess how long an operation lasted when students were involved in operating on patients who required dento-alveolar procedures on a day-case basis.
2. To assess the immediate post-operative morbidity experienced by patients who had their operations performed by student/staff operators compared with experienced operators.

3. Method

Prior to the students performing their first surgical operation on a patient, experience was gained on a pig's head and suturing techniques were practised on commercially available suture aids. Under one-to-one supervision, 55 second-year clinical students undertook surgical removal of third molar teeth for the first time on patients under general anaesthesia in a day case setting. Peri-operative analgesia was provided by a single bolus dose of fentanyl 1µg/kg. Local anaesthesia was not administered at the operation sites pre or post-operatively, so that a verbal rating pain-scale could be utilised and lower lip or tongue anaesthesia/paraesthesia could be assessed. The experienced staff operators first surgically removed one impacted mandibular third molar tooth demonstrating each stage and then each student removed the contra-lateral third molar. There was no significant difference between the levels of tooth eruption and types of impaction of the teeth removed by each group. The length of operating time was measured from the time the surgical incision was made to when the last suture was placed. Following each patient's recovery, post-operative morbidity in terms of the incidence of pain, nausea and vomiting were recorded. The time from completion of surgery to request for analgesia was taken as the first indicator of pain. Patients graded their response to pain immediately after surgery utilising a verbal rating scale, as follows.

Surgical procedure	Student/Staff Operators	Experienced Operators
2 lower third molar teeth	30	33
2 lower and 1 upper third molar teeth	25	18
Total	55	51

Fig. 1. Type of surgical procedures performed in each operator group.

1. No pain;
2. mild pain;
3. moderate pain; and
4. severe pain.

Nausea and vomiting scores were also recorded verbally as yes or no immediately after surgery. At the time of discharge, the pain, nausea and vomiting scores were noted for all patients and the length of stay in the Unit also recorded.

A second group of patients were operated on entirely by experienced operators and similar assessments of post-operative morbidity were recorded. Prior to discharge, patients were asked if they had lower lip or lingual nerve anaesthesia/paraesthesia.

4. Results

Thirty-nine females and 16 males (mean age 24.4, S.D. 5.8) were operated on by students and 34 females and 17 males (mean age 24, S.D. 4.6) were operated on by experienced operators. Fig. 1 shows the types of surgery performed by student/staff and experienced operators.

The median operation time when student/staff operators were involved was 30.0 (range 10–60) min compared with 20.0 (range 5–55) min for experienced operators. Fig. 2 shows the pain scores immediately following recovery. Seventy-eight percent of patients in the student/staff operator group suffered moderate/severe pain immediately after surgery compared with 59% of patients treated by experienced operators. Post-operative analgesia was requested in the student/staff operator group at 23.0 (range 0–100) min and in the experienced operator group 30.0 (range 0–80) min.

Patients remained in the Unit for up to 120.0 (range 85–320) min in the student/staff operator group compared with 110.0 (range 80–150) min in the experienced

	No Pain	Mild Pain	Moderate Pain	Severe Pain
Student/Staff Operators	1	11	28	15
Experienced Operators	1	20	23	7

Fig. 2. Pain scores immediately after surgery.

operator group. Four patients in the student/staff operator group had post-operative nausea and vomiting. In comparison only one patient who was operated on in the experienced operator group suffered this (operating time 42 min). One of the patient's in the student/staff operator group required overnight admission as her symptoms of post-operative nausea and vomiting continued (mean operating time 50 min). Another patient in the student/staff operator group had an adverse reaction to an anaesthetic induction agent, propofol, and was detained in the Unit for 6 h post-operatively for observation, but was then allowed home. At discharge, all patients were pain-free and did not suffer with post-operative nausea and vomiting except for the one patient who was admitted as she continued to feel nauseous.

Prior to discharge, all the patients were asked if they had lower-lip or tongue anaesthesia/paraesthesia. Six patients in the student/staff operator group suffered temporary lingual nerve anaesthesia compared with none in the experienced operator group. At review, 2 weeks post-operatively, lingual nerve anaesthesia/paraesthesia had resolved completely in all six patients.

5. Discussion

Early exposure to the 'live' surgical setting can be an effective method of under-graduate teaching. This study demonstrated that students can gain valuable experience in oral surgical procedures on a one-to-one basis in a day case setting, but can contribute to an increase in immediate post-operative morbidity. Although the majority of patients requiring surgical excision of third molar teeth would be treated with local anaesthesia or local anaesthesia supplemented with sedation, teaching surgery under general anaesthesia is a conducive environment for undergraduate students with no previous surgical experience. This study was undertaken to examine the post-operative morbidity experienced by patients operated on by students. A similar comparative group of patients were treated entirely by experienced operators. The student/staff operator group is disadvantaged as the students lack surgical experience. To examine the objectives stated, the morbidity experienced by patients in the experienced operator group provided a comparison to when students were involved in the operation.

The operation time and post-operative morbidity was increased when student/staff operators were involved. This finding is not consistent with a study of 31 final year medical students at a major Australian teaching hospital. The students were reported to have no significant effect on operating time and the staff did not think they detracted from overall efficiency [7]. The students in this particular study were only assisting the surgeon

in the operation theatre and not performing the surgery. The authors felt that students may enhance actively the quality of patient care.

Student/staff operations were of a longer duration and patients remained in the day unit for up to two and half hours (excluding the single patient who was detained for 6 h) whereas in the experienced operator group, patients were discharged within one and half hours post-operatively. The three most common medical causes of discharge of over 50 min are pain, drowsiness, nausea and vomiting [8]. Four patients in the student/staff operator group remained in the unit due to post-operative nausea and vomiting compared with only one patient in the experienced operator group. The time at which post-operative analgesia was requested was comparable in both groups of patients. The extended time in recovery due to post-operative nausea and vomiting may reduce the number of other patients that may be treated [9]. Another possible disadvantage of teaching students in a day unit is that the rapid turnover of patients limits student contact, and the potential slowing effect of teaching on the clinical workload could have an impact on contractual commitments [4]. During this module of surgical teaching, the throughput of patients on a list was reduced in order to accommodate teaching.

The day surgery unit is an appropriate setting for surgical teaching for dental students. The increased use of day surgery units for teaching is one way in which hospitals and medical schools could address students' needs for a more modern and relevant curriculum [10]. Day case surgery is now considered to be the best option for 50% of all patients undergoing elective surgery [2] and reflects current and future health care practice. The next generation of doctors and dentists must be trained to manage most patients on a day case basis and their education in such management must begin during their undergraduate course.

6. Conclusion

Four patients out of 55 in the student/staff operator group suffered immediate post-operative morbidity compared with one out of 51 patients in the staff operator group. Student operators do affect the immediate post-operative morbidity suffered by patients undergoing routine dento-alveolar surgery in a day case setting, however, day case operating lists provide an ideal environment for teaching/learning.

References

- [1] Greenwood M, Rood JP, Snowdon AT. Five years experience of oral day surgery. *Ambulat Surg* 1993;1(3):103–5.

- [2] Royal College of Surgeons. Guidelines for Day Case Surgery. London: Royal College of Surgeons of England, 1992.
- [3] Audit Commission. All in a Day's Work—An Audit of Day Surgery in England and Wales. HMSO, 1992.
- [4] Seabrook MA, Lawson M, Woodfield S, Baskerville PA. Undergraduate teaching in a day surgery unit: a 2 year evaluation. *Med Educ* 1998;32:298–303.
- [5] Lowry S. Trends in health care and their effects on medical education. *Br Med J* 1993;306:255–8.
- [6] Rees L, Wass J. Undergraduate medical education. *Br Med J* 1993;306:258–61.
- [7] Rudkin GE, O'Driscoll MC, Carty VM. Does a teaching programme in day surgery impact on the efficiency and quality of care. *Aust New Zealand J Surg* 1997;67:883–7.
- [8] Parlin DJ. Factors affecting discharge time in adult out-patients. *Anesth Analg* 1998;87:816–26.
- [9] Hirsch J. Impact of post-operative nausea and vomiting in the surgical setting. *Anaesthesia* 1994;49(Suppl.):30–3.
- [10] Seabrook MA, Lawson M, Baskerville PA. Teaching and learning in day surgery units: a UK survey. *Med Educ* 1997;31:105–8.