

Comparison Of Exposure To GA In Pediatric Dental Patients Between Private And Academic Dental Settings

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ABSTRACT

Purpose: To compare the duration of GA for pediatric dental patients between a private and academic setting, to estimate the dental procedures performed and the operating room variables and to compare these variables between the dental consultants with different levels of experience.

Methods: Retrospective study comparing the timings for performing dental procedures for pediatric patients under GA between private setting and an academic hospital. Data for the private setting was taken from a non-hospital referral-based GA pediatric dental practice based in Calgary, Alberta. data analysis was done by applying ANOVA, post hoc tukey analysis, independent sample t test and chi square test.

Results: The mean age of the patients was 6.81 + 5.38 years. A total of three pediatric dentists performed the dental procedures in the private setting. The proportion of ASA type II cases was significantly higher among the academic hospital patients. All the operating room variables were higher for the academic setting ($p < 0.001$). Moreover, none of the private setting cases took more than three hours. A greater mean number of procedure types were performed in the private setting ($p < 0.001$).

Conclusion: Private setting showed optimal results regarding operating room timings as compared to the academic setting. Experience of the consultants play a great role in minimizing the risk factors for prolonged GA time.

BACKGROUND

- High prevalence of Early childhood caries in preschool children impacts negatively on the child's health.
- Advance behavior management techniques including protective stabilization, sedation with nitrous oxide and general anesthesia helpful in case of uncooperative, stubborn, and hyper motive children.
- Prolonged anesthesia in children below age 3 may affect cognition and neural development.
- FDA 2016 and 2017 warning emphasized: exposure to general anesthetic and sedation drugs for more than 3 hours can cause widespread loss of nerve cells in the developing brain of children under 3 years of age.**
- Risk factors for prolonged General anesthesia exposure in children include patient-related factors, surgeon-related factors, dental treatment rendered, and operating room variables.
- Younan et al 2022 reported that in an academic setting, provider level of training was a factor in prolonged general anesthesia cases of children under age three.

We hypothesize that there are differences between academic and private setting patients and general anesthesia times for dental rehabilitation.

METHODS

- UTHealth Houston Institutional Review Board approved this retrospective study.
- Private setting data retrieved from a non-hospital referral based GA pediatric dental practice based in Calgary, Alberta.
- Academic hospital Data retrieved from the UTHealth Pediatric Dentistry post-graduate clinic at Children's Memorial Hermann Hospital in Houston, Texas.
- For all patients, age, gender, ASA status, dental procedures rendered, operating room variables were obtained.
- Statistical analysis completed using ANOVA, Students T test, Chi-square test, and Tukey post hoc analysis. P-values < 0.05 considered significant.

- Data from 309 patients treated in an academic setting and 96 patients treated in a private setting were available for analysis.
- Academic setting patients were more likely to be younger and more medically compromised than patients treated in the private setting ($P < 0.001$; Table 1).
- Treatments provided were similar between the two groups (Figure 1).
- All operating room timings were higher for the academic hospital cases: number of procedures ($p < 0.001$), procedural time ($p < 0.001$), radiograph time ($p < 0.001$), throat pack time ($p < 0.001$), AND total OR time ($p < 0.001$).
- Of the private setting attendings ($n=3$), differences existed in treatments provided and time to complete dental rehabilitation. However, none of the private setting cases took more than three hours.

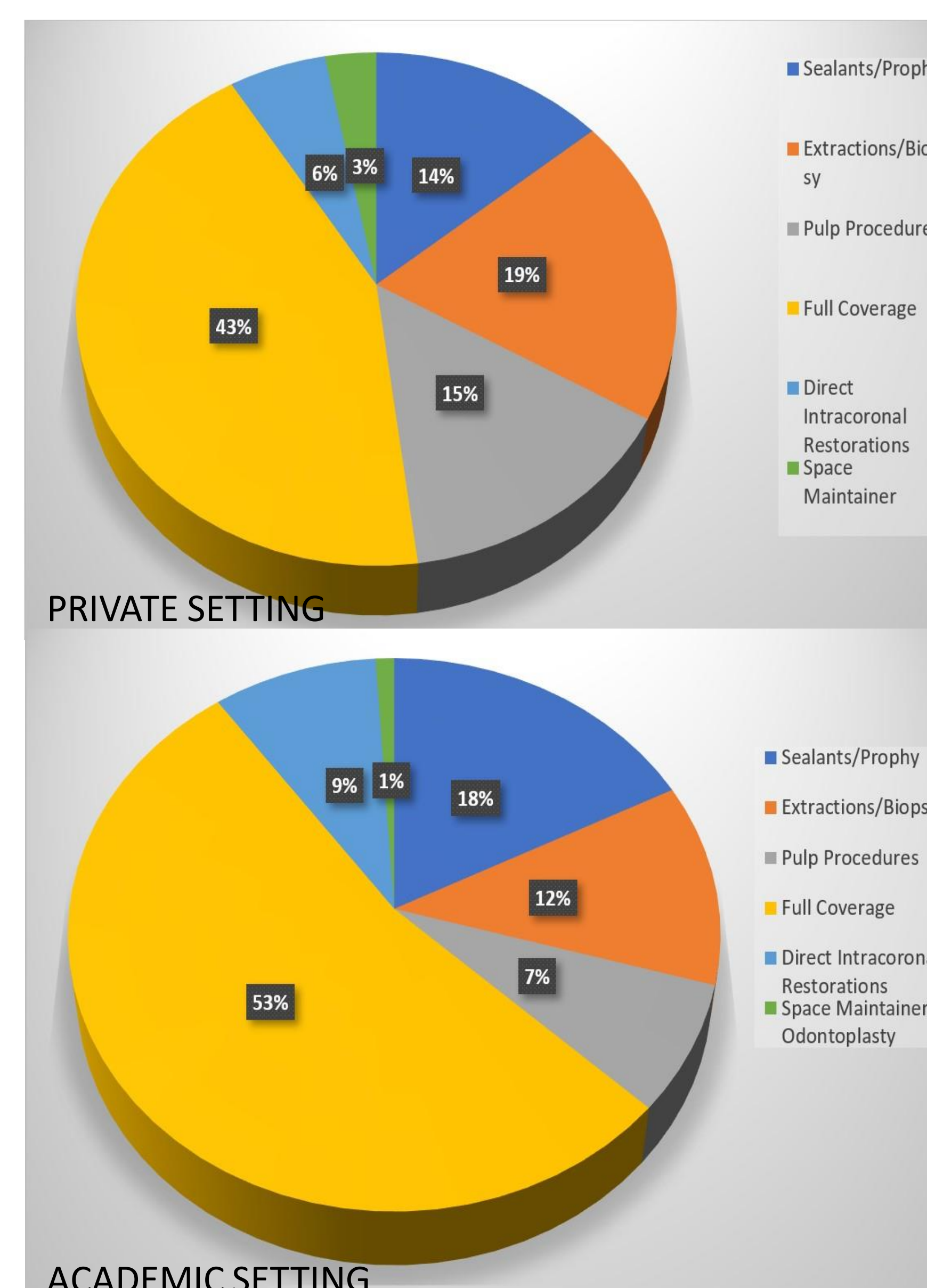


Figure 1: Procedure types by dental setting.

RESULTS

Variable	Academic		Private		P Values
Age (Years)	3.32 ± 0.78		6.81 ± 5.38		< 0.001
Gender	Female	Male	Female	Male	0.328
	143 (46.3%)	166 (53.7%)	33 (54.1%)	28 (58.9%)	
ASA Type	I	II	I	II	< 0.001
	157 (51.8%)	146 (48.2%)	86 (92.5%)	7 (7.5%)	
Procedural Time	7.71 ± 4.03		4.97 ± 3.74		< 0.001
Radiograph Time	27.55 ± 9.63		11.90 ± 3.48		< 0.001
Throat Pack Time	102.64 ± 40.69		66.01 ± 25.73		< 0.001
Total OR Time	163.39 ± 83.28		83.28 ± 26.64		< 0.001
Cases < 3 Hours	>3 Hours	< 3 Hours	>3 Hours	<3 Hours	< 0.001
	91 (29.5%)	217 (70.5%)	0 (0%)	96 (100%)	

Table 1. Differences between patient-factors and operating room variables between academic and private setting.

DISCUSSION

- Patients treated in a residency program are different than what is seen in the private setting.
- Patients treated in a private setting require less general anesthesia time.
- Limitations**
 - incomplete records as data were not recorded properly in the electronic health record system
 - Small sample size of review charts
- Future Research**
 - Focus should be placed on identifying ways to reduce GA time in an academic setting

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REFERENCES

