

Knowledge of Application and Confidence among Dental Students Regarding Practice of Third Molar Auto transplantation in the Region of Missing Molar – An observation from colleges of Sothern India

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Abstract

Introduction: Auto transplantation is a surgical movement of a tooth from one location in the mouth to another in the same individual. This is a cost-effective method that is neglected in Dental education.

Objectives: To measure the knowledge of application and confidence among dental students regarding

practicing third molar auto transplantation in the region of missing molar tooth

Materials and methods: This cross-sectional study design survey was carried out among the Dental students selected randomly. Data was collected through a self-administered questionnaire and distributed by Google forms.

Results: A total of 280 responses were received. 253 (90.4%) were aware of the term Auto transplantation. Important criteria and indications for a successful auto transplantation were rightly identified by 170 (60.7%) and 165 (58.9%) of the students respectively, 175 (62.5%) had knowledge about the causes of auto transplant failure. The theoretical aspect viz indication, advantages of auto transplant and criteria, indication for a successful transplant showed significant association (p value < 0.05) with year of study while no variable on confidence in practice of auto transplant showed Association.

Conclusion: The results of our study indicate a huge gap in both theoretical and practical application-oriented knowledge among dental students on auto transplantation. The study further shows that there is almost nil exposure to training and practice of auto transplantation of missing first molar in dental schools.

Keywords: Auto transplantation, Dental education, Missing molar

Introduction

One of the primary goals of dentistry is the replacement of missing teeth to restore masticatory function and aesthetics. Conventionally, missing teeth have been replaced with removable prostheses, which often cause discomfort to the patient, or fixed prostheses, which involve the preparation of one or more healthy teeth¹. At present, due to advances in Osseo integrated implants, auto logo us tooth transplantation or auto transplantation is rarely indicated. However, the placement of Osseo integrated implants is contraindicated in patients who have not yet completed physical growth, making auto transplantation a viable alternative for young patients^{2,3,4} Although auto transplantation is a rehabilitation method that achieves high success^{3,5,6,7,8} this technique isn't given importance in dental schools, and in oral and maxillofacial surgery textbooks³. The aim of the study is to assess this gap,

with specific objectives of measuring the knowledge of application and confidence among dental students regarding practicing third molar auto transplantation in the region of missing molar tooth.

Methodology

A cross-sectional study design was used to achieve the objective of the study. Dental students were selected randomly from a list of students provided by the consenting dental colleges in Tamil Nadu. Third year, final year and interns were included in the study and first year and second year students were excluded from the study. Data was collected through a questionnaire distributed by Google forms to the selected dental students. The self-administered questionnaire was developed based on literature⁹ and expert opinion. This questionnaire included 16 questions on academic qualification of the participants, awareness of application of auto transplantation procedure and confidence in practicing auto transplantation procedure.

Validation of questionnaire was done by 5 subject expertise and statistical analysis based on cron Bach alpha. The cron Bach alpha value was 0.9466 which indicated a good internal consistency.

The calculated sample size was 263, assuming a prevalence of 64.3% from a previous study¹⁰ (Awareness of dental implants among medical and dental students 2017) with a relative precision of 9% and $Z\alpha$ of 1.96. The calculated sample size was approximated to 316 adding a non-response rate of 20% as we had planned an online data collection.

The participants were informed about their rights to withdraw from the study at any point of time. The response of questionnaire are kept under strict confidentiality and information will be used for academic propose only. Ethical approval of the study was obtained from the Institute Ethics committee of

Tagore Dental College and Hospital, Chennai

Statistical analysis

Collected filled questionnaire were coded and data were entered in SPSS software version 16. We used mean and proportion for presenting the descriptive data. For inferential statistics we used chi square test with p value of 0.05 and below as significant association.

Results

We received a total of 280 responses out of 316 requests, 120 interns (42.9%), 82 final year (29.3%) and 78 third year (27.9%) students.

Knowledge on application of auto transplantation Of the 280 respondents 253 (90.4%) were aware of the term Auto transplantation. Most participants 208 (74.3%) identified the teeth that are commonly used for Auto transplantation, while 155 (55.4%) were aware of the indications for auto transplantation. More than half of the respondents 164 (58.6%) knew about the advantages, while 139 (49.6%) knew about the procedure time duration and only 111 (39.6%) knew about the therapy which is immediately needed after auto transplantation. Lesser than half of the respondents 113 (40.4%) correctly identified the volume of alveolar bone reduction needed in auto transplanted tooth region. The important criteria and indications for a successful auto transplantation were rightly identified by 170 (60.7%) and 165 (58.9%) of the students respectively, while 175 (62.5%) had knowledge about the causes of auto transplant failure. Confidence of Dental students in practice of Auto trans plantation

Only 85 (30.4%) of dental students are confident in doing auto transplantation procedure. The majority of dental students and interns 205 (73.2%) and 216 (77.1%) said they would advise auto transplantation procedure in young patients and as an alternative approach in replacing missing tooth respectively. However, only 19

(6.8%) have performed tooth auto trans plantation procedure and 231 (82.4%) had not advised auto trans plantation procedure as a treatment preference in molar tooth replacement.

Table 1 and 2 shows the association between year of study and knowledge on application and confidence in practice of Auto transplant. Indication, advantages of auto trans plant and criteria, indication for a successful transplant showed sign if cant association (p value < 0.05).

Discussion

The results on knowledge on application showed most (90.4%) of the students being aware of auto transplant for missing tooth and this finding is similar to a study in Saudi Arabia which reported 84% awareness of the term auto transplant¹¹, while another study done in India on Paediatric Dentist showed 76.5% awareness¹². Identification of the correct teeth for Auto trans plantation was high in our study (74.3%) this finding too was com parable to the study done among Paediatric dentist which reported 76.5%¹².

About half of the students (55.4%) were aware of the indications for auto transplantation, which was considerably low when compared to another study done in India, which reported 75.9% awareness of indication of placing dental implant¹³. This could be because the study was on awareness about dental implants among practicing dentist. Practicing dentist would have a better understanding and application skills of a very common and popular procedure (dental implants) used to manage missing tooth when compared to dental students who are not adequately trained in auto transplant procedure.

More than half of the respondents (58.6%) knew about the advantages, this was similar with findings of a study done among dental students with respect to knowledge about advantages (51%) of dental implant¹⁴. The

procedure time duration (stage protocol) was known by 49.6% of dental students which was relatively lower when compared to other studies done on dental student's knowledge of loading protocol of dental implants^{13,15}. This could be because dental implants are the most common and popularly used procedure which is discussed frequently in dental schools.

The important criteria and indications for successful auto transplantation were rightly identified by 60.7% and 58.9% of the students respectively in our study which too was lower than the study done in India on Paediatric Dentist (76.5% and 83.3%)¹². This may be because of the difference in samples, we used dental students while the other study used practicing paediatric dentist, whose practical knowledge would be expected to be higher than interns and dental students. However, knowledge about the causes of auto transplant failure was comparable between our study (62.5%) and the study done on Paediatric Dentist (59.2%)¹²

With regards to confidence in performing auto transplantation procedure there was not much difference in proportion between our study (30.4%) and the study done on paediatric dentist (28.2%)¹² in India. Such low confidence level in performing the auto transplant procedure could be due to lack of training and practice of auto transplant in dental schools. This facet is further supported by the fact that very few in our study (6.8%) and the study on paediatric dentist (4.4%)¹² have actually performed this procedure.

Results related to association between year of study and knowledge on application and confidence in practice of Auto transplant showed that theoretical aspect viz indication, advantages of auto transplant and criteria, indication for a successful transplant showed significant association (p value < 0.05) with year of study while no variable on confidence in practice of auto transplant

showed association. That is irrespective of the year of study students lack confidence in performing. This reflects the point that there is a lack of training and practice of auto transplantation in dental schools.

Although our study was able to throw light on the current knowledge of dental students on application and practice of auto transplantation, we were unable to validate our findings, as we had to compare some of our results with studies on dental implant because of paucity of published research work related to auto transplantation of tooth. Another limitation of the study was that we could not interview the students and interns face to face.

Table

Table 1: Association between year of study and knowledge on application of Auto transplant.

Knowledge on application of Auto transplant	Year of study	N (%)	p value
Definition of Auto transplantation	Interns	112(93.3)	0.072
	Final Year	74 (90.2)	
	Third year	67 (85.9)	
Teeth commonly used for Auto transplantation	Interns	94 (78.3)	0.32
	Final Year	61 (74.4)	
	Third year	53 (67.9)	
Indications for auto trans plantation	Interns	67 (55.8)	0.046*
	Final Year	39 (47.6)	
	Third year	49 (62.8)	
Advantages of auto trans plant	Interns	75 (62.5)	0.043*
	Final Year	45 (54.9)	
	Third year	44 (56.4)	
Procedure time duration	Interns	66 (55)	0.180
	Final Year	34 (41.5)	
	Third year	39 (50)	
After therapy treatment	Interns	55 (45.8)	0.100
	Final Year	31 (37.8)	
	Third year	25 (32.1)	

Volume of alveolar bone reduction needed	Interns	46 (38.3)	0.106
	Final Year	28 (34.1)	
	Third year	39 (50)	
Criteria for a successful auto transplantation	Interns	81 (67.5)	0.006*
	Final Year	55 (67.1)	
	Third year	34 (43.6)	
Indications for a successful auto transplantation	Interns	86 (71.7)	0.000*
	Final Year	47 (57.3)	
	Third year	32 (41)	
Transplant failure	Interns	74 (61.7)	0.179
	Final Year	58 (58)	
	Third year	43 (55.1)	

P value < 0.05

Table 2: Association between year of study and confidence in practice of auto transplant

Confidence in practice of Auto trans plant	Year of study	N (%)	p valve
Confidence in performing auto transplant	Interns	34 (28.3)	0.296
	Final Year	22 (26.8)	
	Third year	29 (37.2)	
Willing to advice auto transplant to young patients	Interns	85 (70.8)	0.727
	Final Year	62 (75.6)	
	Third year	58 (74.4)	
Willing to advice auto transplant as an alternate approach	Interns	85 (70.8)	0.089
	Final Year	68 (82.9)	
	Third year	63 (80.8)	
Performed auto trans plant	Interns	7 (5.8)	0.869
	Final Year	6 (7.3)	
	Third year	6 (7.3)	
Advised auto transplant	Interns	7 (5.8)	0.856
	Final Year	6 (7.3)	
	Third year	6 (7.7)	

***p value < 0.05**

Conclusion

The results of our study indicate a huge gap in both theoretical and practical application-oriented knowledge among dental students on auto transplantation. The study further shows that there is almost nil exposure to training and practice of auto transplantation of missing first molar in dental schools.

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