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A SURVEY OF CURRENT TRENDS IN SELF-LIGATING BRACKETS: AN ORTHODONTISTS'S PERSPECTIVE.

Orthodontics

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ABSTRACT

Objective: To ascertain the benefits of Self-Ligating brackets based on the clinical experience of Orthodontitsts.
Materials and Methods: A questionnaire consisting of 19 questions was formulated and circulated among orthodontists consisting of five sections representing patients comfort, treatment duration, extraction vs non-extraction debate, operators convenience and operators experience. The responses were then evaluated based on the total experience of orthodontists and statistically analysed.
Results and Conclusions: A total of 323 responses were received. Self-Ligating Brackets improved patient comfort but had no impact on the overall treatment time when compared to Conventional brackets. 66.8% respondents believed that it caused expansion of the arches using a combination of routine wire and the wires supplied with the kit which may help in converting some borderline cases to non-extraction. Thought it did not have any improvements with the post treatment stability, it certainly reduced the chair time for each patient. The usage of these brackets enhanced with the increasing experience of orthodontists($p=0.001$) and thus it can be paraphrased that its frequency is increasing as more of its benefits are unravelled, although the individual factors still need to be evaluated using clinical studies to produce an evidence based protocol.

KEYWORDS

Self-ligating Brackets; Survey; Conventional Brackets.

INTRODUCTION

After more than 80 years, when the idea of Self-ligating brackets (SLB) was first described by Stolzenberg in 1935, it has recently become increasingly popular over the last two decades. The revival of this concept has been possible only because of the evolution of this system in due course of time, courtesy various clinicians and researchers who saw a potential in self-ligating system of being more than just a bracket system.

Many advantages of self-ligating brackets over conventional brackets (CB) have been claimed such as full and secure wire ligation, better sliding mechanics[1], possible anchorage conservation, better comfort[2] and periodontal health[3,4], reduced chair time[5] and most importantly less friction with archwires[1]. Thus, due to decreased friction, less force is required to produce tooth movement, thereby helping in decreasing treatment duration, more alveolar bone regeneration & healthy periodontium. Along with this, it is also hypothesized that some amount of expansion occurs with this technique which reduces the need for extractions, and in turn helps in converting most of the extraction cases into non-extraction cases.

With all the above mentioned advantages being marketed and reported, self-ligating brackets have become one of the most important topics discussed in the orthodontic literature. Multitudinous studies have been published on the individual aspects of treatment modalities such as the friction[1] or amount of expansion[6,7] while using self-ligating brackets but even after so many years of its usage we often get mixed reviews by fellow orthodontists and when we try to look for a clinical based evidence in the literature, things are not very conclusive.

Hence it is very necessary to find out what actually the thoughts of our fraternity and how they deal with the basic intricacies of self-ligating brackets on a broader level. The necessity of the hour is to clear out the ambiguity of self-ligating brackets on its said advantages such as reduction in chair time, better patient cooperation, better oral hygiene maintenance, whether expansion occurs and if yes then how much and by which wires. It is also important to find out how frequently this system is being used and its various modifications that should be done while using this system. Above all we must also know about its overall efficiency and patient's satisfaction.

Thus, the soul intention of this study was to clarify which assertions about this bracket system are based on arguably firm clinical experience and published evidence from the one which are first hypothesized and then used for cheap marketing. This distinction can only be made by the contribution of various experienced orthodontists who by sharing their real time clinical experience and enlisting the facts about this system, can help in increasing the knowledge of present and for the times to come.

Aims & Objectives

- To evaluate whether self-ligating bracket enhances patients comfort and cooperation.
- To check whether this system aids in reducing the overall treatment time.
- To find out whether this system actually converts an extraction treatment into non-extraction treatment.
- To get an insight into operators convenience and comfort.
- To assess operators experience and competence in this system.

Material & Method

The study participants were orthodontists who hold a masters degree in the speciality and were registered with the Indian Orthodontic Society and are currently practicing in India. The survey questionnaire was prepared in English language in a digital format using Google forms which was circulated via an online multiple objective and subjective question survey, but since the study was shared on various online platforms it also included responses from individuals such as expatriate orthodontists and general dental practitioners who tend to practice orthodontics and thus were out of the ambit of this study, hence their responses were excluded from the final evaluation.

Pilot testing of the survey questionnaire was performed on 10 experienced orthodontists for surface validation before conducting the final survey and their comments were incorporated in the final version of the survey, but their responses were excluded from the test sample. The final questionnaire consisted of 18 questions out of which 17 were

multiple choice questions along with 1 subjective question. (Figure 1)

The first question was aimed at discerning the responses according to the length of the work experience of fellow participants. Thereafter the requested information from other questions was divided into five sections seeking specific.

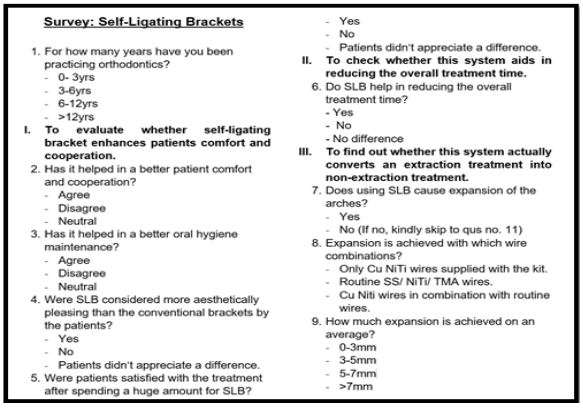
The first section consisted of 4 questions which were aimed at the general feedback participants get from the patients that whether the patient came across any discomfort in terms of their oral hygiene, aesthetics and their overall satisfactions levels. The second section of only 1 question gathered information about the swing in the total treatment duration. The third section involved 5 questions regarding the great debate of whether to extract or not while using SLB. In the fourth section respondents were given 4 questions and were asked to give an overview of their own comfort and improvements in the clinical efficiency if any. The final section consisted of 2 questions regarding expertise of respondents particularly in SLB.

The sole subjective question was later ruled out as it was based on the use of various brands and thus would have shown a bias towards a particular company in our study.

The survey was conceptualised for 3500 active members of IOS, so at 90% Confidence Interval and +/- 5% sampling error, 253 responses were required. The survey concluded approximately 2 months after the initial mailing, when virtually all responses had ceased. Confidentially of the participants and their responses was maintained.

The data was analyzed using SPSS v20 software. Level of significance was kept at 5%. Significance between differences was evaluated by Chi- square test. The p value of < 0.05 was considered as statistically significant.

(Fig. 1: Survey Instrument)



Survey: Self-Ligating Brackets

1. For how many years have you been practicing orthodontics?
   - 0- 3yrs
   - 3-6yrs
   - 6-12yrs
   - >12yrs

I. To evaluate whether self-ligating bracket enhances patients comfort and cooperation.

2. Has it helped in a better patient comfort and cooperation?
   - Agree
   - Disagree
   - Neutral
3. Has it helped in a better oral hygiene maintenance?
   - Agree
   - Disagree
   - Neutral
4. Were SLB considered more aesthetically pleasing than the conventional brackets by the patients?
   - Yes
   - No
   - Patients didn't appreciate a difference.
5. Were patients satisfied with the treatment after spending a huge amount for SLB?
   - Yes
   - No
   - Patients didn't appreciate a difference.

II. To check whether this system aids in reducing the overall treatment time.

6. Do SLB help in reducing the overall treatment time?
   - Yes
   - No
   - No difference

III. To find out whether this system actually converts an extraction treatment into non-extraction treatment.

7. Does using SLB cause expansion of the arches?
   - Yes
   - No (If no, kindly skip to qus no. 11)
8. Expansion is achieved with which wire combinations?
   - Only Cu NiTi wires supplied with the kit.
   - Routine SS/ NiTi/ TMA wires.
   - Cu Niti wires in combination with routine wires.
9. How much expansion is achieved on an average?
   - 0-3mm
   - 3-5mm
   - 5-7mm
   - >7mm
10. When do you recommend SLB?
    - Extraction cases
    - Non- extraction cases
    - Borderline cases
    - Can be used for any of the above
11. Do SLB convert an extraction case to non-extraction case as advocated by various companies?
    - Yes
    - No
    - Yes, but in very minimal cases
    - Can't say

IV. To get an insight into operators convenience and comfort.

12. Which SLB were more efficient?
    - Metal
    - Ceramic
    - No difference
13. Was there a relapse seen with SLB?
    - Less than routine bracket prescription.
    - More than routine bracket prescription.
    - No difference.
14. Has using self-ligating system helped in reducing chair time for each patient?
    - Agree
    - Disagree
    - Neutral
15. Which wire combinations do you routinely use with self-ligating brackets?
    - Only Cu NiTi wires supplied with the kit.
    - Routine SS/ NiTi/ TMA wires.
    - Cu Niti wires in combination with routine wires.

V. To assess operators experience and competence in this system.

16. How frequently do you use self-ligating brackets on an average?
    - Almost every case
    - Once in every five cases
    - Once in every ten cases
    - Once in every twenty or more cases
    - Rarely
    - Never
17. Where do you position SLB most commonly?
    - FACC
    - Incisally
    - Gingivally
    - Case pertaining

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18. Which brand do you use most commonly?_____

----------x----------

RESULTS

A total of 323 completed responses were received. The first question was to segregate the participants on the basis of their experience as orthodontists and showed that of all the respondents, 26.9% were highly experienced (>12yrs), 29.7% were experienced (6-12yrs), 19.8% were moderately experienced (3-6yrs) and 23.5% were beginners (0-3yrs). This information was used for analysing the subsequent responses. (Figure 2)

Table I describes the patients perception of overall comfort and satisfaction levels (questions 2-5).

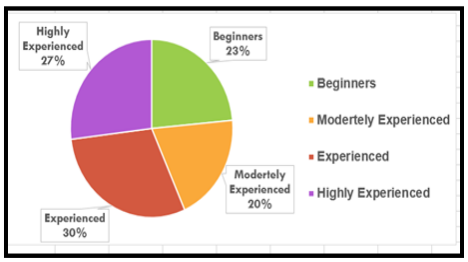
Table II illustrates the effect on treatment duration (question 6).

Table III summarizes the various factors considered to decide an extraction or non-extraction treatment plan (questions 7-11).

Table IV depicts the benefits of SLB that are directly experienced by the orthodontist (questions 12-15).

Table V is a summary of how well versed the participants are with SLB (questions 16-17).

Along with the summary of responses all the tables also include the chi-square value and the p-value indicating the significance of a particular response.



(Fig. 2: Response ratio)

Table I: Patients comfort and cooperation.

Variables	Overall	Experience wise distribution				Chi-square value	p-value
		0-3yrs	3-6yrs	6-12yrs	>12yrs		
Q2.							
Agree	62.7	72.4	54.7	56.3	67.4	9.865	0.130 (NS)
Disagree	8.1	3.9	14.1	9.4	5.8		
Neutral	29.2	23.7	31.3	34.4	26.7		
Q3.							
Agree	51.9	64.5	46.9	46.9	50.0	8.749	0.188 (NS)
Disagree	13.3	6.6	18.8	13.5	15.1		
Neutral	34.8	28.9	34.4	39.6	34.9		
Q4.							
Yes	35.7	55.3	21.9	33.3	31.4	20.375	0.002*
No	13.1	7.9	15.6	16.7	11.6		
Patients didn't appreciate a difference	51.2	36.8	62.5	50.0	57.0		
Q5.							
Yes	49.4	56.6	37.5	45.8	55.8	8.332	0.215 (NS)
No	4.0	2.6	3.1	5.2	4.7		
Patients didn't appreciate a difference	46.6	40.8	59.4	49.0	39.5		

Table II: Effect On Overall Treatment Time.

Variables	Overall	Experience wise distribution				Chi-square value	p-value
		0-3yrs	3-6yrs	6-12yrs	>12yrs		
Q6.							

Yes	37.6	42.1	31.3	38.5	37.2	17.058	0.009*
No	24.5	9.2	35.9	30.2	23.3		
No difference	37.9	48.7	32.8	31.3	39.5		

Table III: Debating Extraction vs Non-extraction Treatment.

Variables	Overall	Experience wise distribution				Chi- square value	p-value
		0-3yrs	3-6yrs	6-12yrs	>12yrs		
Q7.							
Yes	66.8	64.5	60.9	71.9	67.4	2.307	0.511 (NS)
No	33.2	35.5	39.1	28.1	32.6		
Q8.							
Only Cu Niti wires supplied with the kit	27.6	30.3	26.6	35.4	25.6	13.155	0.041*
Routine SS/NiTi/TMA	9.3	14.5	9.4	10.4	3.5		
CuNiti wires in combi-nation with routine wires	29.9	22.4	32.8	31.3	45.3		
No answer	33.2	32.9	31.3	22.9	25.6		
Q9.							
0-3mm	26.4	34.2	37.5	20.8	23.3	20.637	0.014*
3-5mm	29.6	25.0	21.9	38.5	34.9		
5-7mm	9.6	2.6	6.3	12.5	15.1		
>7mm	1.2	0	0	2.1	2.3		
No answer	33.2	38.2	34.4	26.0	24.4		
Q10.							
Extraction cases	1.6	3.9	0	2.1	0	20.037	0.018*
Non- extraction cases	9.6	14.5	12.5	8.3	4.7		
Borderline cases	22.0	31.6	18.8	21.9	16.3		
Can be used for any of the above	66.8	50.0	68.8	67.7	79.1		
Q11.							
Yes	15.8	19.7	10.9	18.8	12.8	20.147	0.017*
No	20.5	7.9	17.2	26.0	27.9		
Yes, but in very Minimal cases	40.4	38.2	45.3	37.5	41.9		
Can't say	**23.3**	**34.2**	**26.6**	**17.7**	**17.4**		

Table Iv: Operators Convenience And Comfort

Variables	Overall	Experience wise distribution				Chi-square value	p-value
		0-3yrs	3-6yrs	6-12yrs	>12yrs		
Q12.							
Metal	53.4	72.4	51.6	46.9	45.3	19.733	0.003*
Ceramic	3.7	5.3	4.7	4.2	1.2		
No difference	42.9	22.4	43.8	49.0	53.5		
Q13.							
Less than routine Bracket prescription	10.9	21.1	7.8	9.4	5.8	13.325	0.038*
More than routine Bracket prescription	3.1	2.6	4.7	4.2	1.2		
No difference	86.0	76.3	87.5	86.5	93.0		
Q14.							
Agree	73.9	75.0	60.9	74.0	82.6	15.253	0.018*
Disagree	6.8	2.6	12.5	10.4	2.3		
Neutral	19.3	22.4	26.6	15.6	15.1		
Q15.							
Only Cu Niti wires supplied with the kit	19.3	23.7	12.5	28.1	10.5	34.689	0.001*
Routine SS/NiTi/TMA	25.8	40.8	25.0	25.0	14.0		
CuNiti wires in combi- nation with routine wires	**55.0**	**35.5**	**62.5**	**46.9**	**75.6**		

Table V: Operators Experience And Competence

Variables	Overall	Experience wise distribution				Chi-square value	p-value
		0-3yrs	3-6yrs	6-12yrs	>12yrs		
Q16.							
Almost every case	8.1	3.9	4.7	8.3	14.0	59.295	0.001*
Once in every five cases	13.7	5.3	18.8	10.4	20.9		
Once in every ten cases	23.9	18.4	18.8	33.3	22.1		
Once in every twentyOr more cases	23.0	17.1	21.9	20.8	31.4		
Rarely	27.6	47.4	26.6	27.1	11.6		
Never	3.7	7.9	9.4	0	0		
Q17.							
FACC	32.9	27.6	42.2	30.2	33.7	9.125	0.426 (NS)
Incisally	3.4	6.6	1.6	2.1	3.5		
Gingivally	4.7	2.6	4.7	7.3	3.5		
Case pertaining	59.0	63.2	51.6	60.4	59.3		

DISCUSSION

Patient's Comfort And Cooperation

62.7% of orthodontists said that SLB helped in better patient comfort and cooperation while 8.1% disagreed and 29.2% were neutral to it. However majority of the orthodontists (67.4% for highly experienced, 56.3% for experienced group, 54.7% for moderately experienced group and 72.4% for beginner group) believed that SLB helped in better patient comfort and cooperation. (p=0.130) This has been supported by Miles et al[2] who reported the initial pain and discomfort was less with the use of SLB as compared to CB whereas Scott et al8 found out no difference in comfort levels between SLB and CB.

Similar responses were seen when asked about oral hygiene where 51.9% of orthodontists said that SLB helped in better oral hygiene maintenance while 13.4% disagreed and 34.8% were neutral to it. Thus again majority of the orthodontists supported SLB for better oral hygiene and there was no significant difference based on experience. (p=0.188) This was supported by few studies who have reported improved oral hygiene and reduced plaque retention possibly due to elimination of elastomeric ligatures.[3,4]

When asked whether SLB were considered more aesthetically pleasing than the conventional brackets by the patients 35.7% were and 13.1% were not in favour while 51.2% said that patients didn't appreciate any difference. Although most of the highly experienced, experienced and moderately experienced orthodontists were of the view that patients didn't appreciates a difference, a statistically significant number of beginners believed that SLB were considered more aesthetic. (p=0.002)

The cost benefit ratio after using SLB showed 49.4% as satisfied patients and 46.6% as patients who didn't appreciate a difference whereas a mere 4% were not of the view of spending such a huge amount. Based on the experience all groups of orthodontists gave similar responses and no statistical difference was obtained. (p=0.215) However, Prettyman et al[9] showed that majority of orthodontists preferred CB only in the sense that CB are more cost effective than SLB. (Table 1)

Therefore it can be paraphrased that the reduced discomfort and pain perception in some studies[2] can be attributed to the fact that SLB eliminates the chances of impingement which are common with ligature tie along with a reduction in halitosis and discolouration occurring with the use of elastomeric modules, although some long term studies show that the reduction in pain and discomfort with an improvement in oral hygiene is evident with SLB but is not statistically significant when compared to CB.[10-12]

Effect On Overall Treatment Time

37.6% orthodontists believed that SLB helps in reducing the overall treatment duration whereas 24.5% and 37.9% believed that it increased or made no difference on treatment duration respectively. There was almost an equal distribution for the three responses amongst all groups based on experience thus showing statistically significant difference. (p=0.009) (Table 2) Although in a study by DiBiase et al[13] they concluded that SLB can reduce the total length of orthodontic treatment by up to 6 months and the number of visits by 4 to 7, which can be because of less resistance to sliding in SLB[14] as a result of minimum binding and friction,[15] however other authors have shown that there was no statistically significant difference in overall treatment time.[16,17]

Extraction Vs Non-extraction Treatment

Out of the total responses 66.8% said that SLB causes expansion of the arches whereas 33.2% said there was no expansion. Also there was no conflict of interest regarding this as we obtained similar responses from all experience groups. (p=0.511) Pandis et al6 also noted a higher intermolar width increase in SLB than the CB whereas Fleming et al[7] found no differences in maxillary arch dimensional changes after alignment with passive selfligating brackets, active self-ligation and conventional brackets.

So from the remaining respondents who achieved expansion, 27.6% used Only CuNiTi wires supplied with the kit, 29.9% used CuNiti wires in combination with routine wires. And a mere 9.3% used exclusively routine SS/ NiTi/ TMA wires. It was also seen that as experience increased orthodontists were more in favour of using a combination of CuNiti wires with routine wires probably to achieve controlled expansion as opposed to the use of only CuNiti wires by the beginners and this difference was statistically significant. (p=0.041). Pandis et al[6] who achieved expansion in their study used the expanded arches supplied with the kit and thus the difference in posterior expansion may solely be attributed to the differences in archwire form and not the bracket type.

From the same lot of remaining respondents the amount of expansion achieved on an average was 0-3mm by 26.4%, 3-5mm by 29.6%, 5-7mm by 9.6% and >7mm by 1.2% of the total respondents. However based on the experience none of the respondents from the beginners and moderately experienced orthodontists achieved an expansion of >7mm along with a statistically significant variance in the responses from each experience group. (p=0.014)

Taking the above findings into consideration when asked about the usage of SLB 1.6% use it only for extraction cases, 9.6% for non-extraction cases, 22% for borderline cases but the majority i.e. 66.8% advocated it for any of the above mentioned scenarios. Although based on the experience majority of respondents in all groups said it can be used in any case but in the beginners group along with this response a fairly decent number of respondents used SLB only in borderline case and thus this difference was statistically significant. (p=0.018)

Thus finally when asked whether SLB convert an extraction case to a non-extraction case, 15.8% agreed and 20.5% disagreed, while 40.4% said yes but in very minimal case, the remaining 23.3% were still confused about this statement. Based on the experience, majorly all groups said that yes it converts but in minimal cases, however as the experience increased the number of respondents saying no increased and number of those who were inconclusive decreased, this change of responses amongst the groups was also statistically significant. (p=0.017) (Table 3) It has been argued in few studies that using SLB may require less extractions mainly due to alignment induced incisor proclination and posterior expansion,[18,19] but majority studies have stated that bracket type made no difference in the extraction decision.[6,20]

In a nutshell, studies have shown a significant increase in inter-premolar and inter-molar widths of both maxillary and mandibular arches using SLB,[21-23] however in a study by Atik et al[24] expansion was achieved but no differences in maxillary arch dimensional changes and incisor inclination changes were found on comparing conventional and self-ligating brackets when used with broad archwires. This clearly lays down the importance of archwires where it can be stated that the role of expanded archwires is more in causing expansion than the type of brackets being used as has also been found from the responses in our study. Therefore, an orthodontist should be aware of the use of SLB combined with broad archwires as a treatment option in planning cases which require movement of teeth into mild to moderately crowded arches.[25]

Operator's Convenience And Comfort

The efficiency of metal brackets was more according to 53.4% orthodontists as opposed to only 3.7% in favour of ceramic brackets, while 42.9% said that there was no difference between the efficiency of metal and ceramic brackets. As per the experience the majority of beginners and moderately experienced orthodontists found metal SLB to be more efficient while majority of experienced and highly experienced orthodontists didn't find any difference in the efficiency of metal and ceramic SLB and this difference based on the experience was statistically significant. (p=0.003) however there is a lack of orthodontic literature when it comes to a comparison particularly between metal and ceramic SLB except one study conducted by Dennis C and Gruenheid T[26] in which ceramic SLB showed a higher resistance to sliding as compared to metal SLB and are therefore considered inferior to metal SLB for orthodontic sliding mechanics.

The amount of relapse seen as compared to the conventional brackets was less according to 10.9% and more as per only 3.1% but the majority of 86% respondents didn't find any difference when it comes to relapse. The responses were similar in all the experience groups barring the beginners group where 21.1% said that SLB caused less relapse than routine brackets whereas <10% were in the favour of this statement in remaining groups making it a statistical difference. (p=0.038) Similar results were obtained in a study by Zhou et al[27] who evaluated long-term stability of treatment with SLB compared with CB and after a follow up period for 7.24years found that brackets type did not affect the long-term stability.

73.9% orthodontists said SLB helped in reducing chair time for each patient while 6.8% said it didn't reduce the chair time and 19.3% were neutral to it. Majority of the orthodontists (82.6% of highly experienced, 74% experienced, 60.9% moderately experienced and 75% beginners) believed that SLB helped in reducing chair time for each patient (p=0.018). The reduction in chair time has been supported by Berger et al[5] who found that the time saving aspect of the self-ligating mechanism was readily apparent, regardless of which SLB bracket was employed.

Most of the practitioners in each group reported using CuNiTi wires in combination with routine wires (75.6% for highly experienced, 46.9% experienced and 62.5% for moderately experienced group). However from the beginners, maximum response was noted for using Routine SS/ NiTi/ TMA wires (40.8%) followed by CuNiTi wires in combination with routine wires (35.5%). This difference in using wire combinations was statistically significant (p=0.001). (Table 4)

Operator's Experience And Competence

It was found that 23.9% orthodontists used SLB once in every ten cases and 23% used SLB once in every twenty cases. Frequency of using SLB in every case was maximum (14.0%) among highly experienced orthodontists and was least for beginners (3.90%). 47.4% of the beginners reported using SLB rarely whereas only 11.6% of highly experienced orthodontists used SLB rarely. Every orthodontist who practiced for more than 6 years reported using SLB. This difference in use of SLB among different years of experience was statistically significant (p=0.001).

Majority of orthodontists (59%) positioned the brackets according to a particular case where as 32.9% placed SLB at FACC and a small number of orthodontists 3.4% and 4.7% placed the SLB incisally and gingivally respectively. The difference amongst the groups based on experience was not significant. (p=0.426) (Table 5)

Thus it can be summarised that all the benefits stated for SLB in the current literature favours an improvement in the trends of advanced clinical practices however more recent systemic reviews and meta-analysis show that though SLB help in mild to moderate expansion and reduced chair time, it does not necessarily improve the clinical efficiency as it has an insignificant impact on other equally important factors such as treatment duration, number of visits, bond strength, finising and long term stability.[28,29]

The limitations of our study is that this study provides only a baseline on SLB from the perception of the members of IOS. Although future studies based on objective measures of performance might give a better insight to form a basis for the selection of the type of brackets, the current findings can act as a primary guideline to orthodontists for forming a tailored approach as per individual patient needs in their clinical setting. Moreover such surveys provide data for conducting further researches such as a high quality randomised clinical trial which is quintessential in giving us an evidence based information and test the validity of a given treatment protocol.

CONCLUSION

This survey provides insight into the usage of SLB by orthodontists. Within the limitations of the present study, the following conclusions can be drawn:

- SLB proved to be beneficial in improving hygiene and patient comfort, although orthodontists were of the view that its increased cost is not justified.
- Majority of the respondents did not find any reduction in the overall treatment time using SLB.
- Orthodontists were of the view that SLB may help in converting only a borderline case to non-extraction as opposed to various anecdotes used for marketing which is mainly due to expansion using a combination of routine wires and CuNiti wires supplied with the kit, although these brackets can be used with any treatment plan.
- SLB does help in reducing chair time even though it has no edge on the long term stability or clinical efficiency over CB.
- An upward trend in the frequency of using SLB was seen as the experience of orthodontists increased depicting that one needs time to adapt and fully utilize the advantages of this bracket system.

Future clinical studies enumerating the factors mentioned in this survey are desired to formulate an evidence based protocol for the use of SLB.

Acknowledgement

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