Review Article

An update on orthodontic brackets – A review

ABSTRACT

Orthodontics is been at great service to mankind. Orthodontics is a field that has been around since the early 18th century. Modern day orthodontists have generations of predecessors to learn their techniques. Technology used in orthodontic treatment continues to progress at an incredible pace. New discoveries and inventions have allowed orthodontists to bring better experiences to their patients with less of the hassle. If we want to continue providing fast, efficient, and effective treatment to our patients, we need to make sure that we stay up-to-date with changes in the field. Orthodontic brackets have evolved from Angle's era to the MBT brackets followed by lingual brackets. These brackets have made the life of the orthodontists much easier. As technology advances many more new materials and designs will be coming forward. The purpose of this article is to review the recent advancements in orthodontic brackets and how the science behind them helps the orthodontist in the day-to-day practice.

Keywords: Brackets, ceramic, customized, lingual, self-ligating

INTRODUCTION

The appearance of fixed orthodontic appliances has always been of particular concern to many patients. The development of appliances which would combine both acceptable esthetics for the patient and adequate technical performance for the orthodontist has remained an elusive goal. Three methods of achieving these criteria have been attempted as follows: (1) altering the appearance of or reducing the size of stainless steel brackets, (2) repositioning the appliance onto the lingual surfaces of the teeth, and (3) changing the material from which brackets are made. There has been a firm trend toward the development of smaller stainless steel brackets but although these generally provide the technical performance required by the orthodontist, they offer little esthetic advantage over conventionally sized appliances.[1] Lingual brackets are esthetic but it can be argued that it produces a decrease in the performance of the appliance and considerable additional technical difficulties and time requirement for the orthodontist.[2] In late 1986, the first brackets made of ceramic materials became widely available. Ceramic brackets have been understandably welcomed by patients; they are the best attempt so far at producing an orthodontic appliance which combines the esthetic needs of the patient with the technical performance required by the orthodontist.[1] Superior esthetics of ceramic brackets are unquestionable but remain their only advantage over stainless steel, as their mechanical properties present major problems in clinical use.[3] Many new generations of brackets are coming up in the market. One must be aware of all the latest developments to give best functional and esthetic results to the patients. The purpose of this review article is to highlight the recent advancements in orthodontic brackets and how they help the orthodontist to give better treatment results.

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MATERIALS AND METHODS

The article reviews various orthodontics brackets available in market which includes ceramic brackets, plastics brackets, self-ligating brackets, lingual bracket, the new Butterfly system, elastic slot system, and customized orthodontic brackets.

CERAMIC BRACKETS

Ceramics are materials which are first shaped and then hardened by heat. Ceramic brackets were introduced in the 1970s, offering many advantages over the traditional esthetic appliances. Ceramic brackets provide higher strength, more resistance to wear and deformation, better color stability, and most important to the patient superior esthetics. The disadvantages are that it lacks ductility, and is difficult and expensive to manufacture. Ceramic brackets are available in a variety of morphologies including true Siamese, semi-Siamese, solid, and Lewis/Lang designs and also various appliance systems including Begg and variable force ligation brackets.[1]

COMPOSITION AND TYPES OF CERAMIC BRACKETS

The ceramic material used in orthodontic brackets is alumina, either in its polycrystalline or monocrystalline form depending on their distinct method of fabrication. Monocrystalline brackets are machined from extrusions of single crystals of sapphire. Polycrystalline alumina brackets, on the other hand, are made by injection molding submicron-sized particles of polycrystalline sapphire (alumina) suspended in a resin, sintering them to fuse the alumina and finally machining the bracket as necessary to produce the finished article. The figures for hardness show that both monocrystalline and polycrystalline alumina have a significant advantage over stainless steel, and that for tensile strength monocrystalline alumina is much stronger than polycrystalline alumina, which in turn is significantly stronger than steel. Both mono and polycrystalline alumina have poor fracture toughness compared to stainless steel.[1] The most apparent difference between polycrystalline and single crystal brackets is in their optical clarity. Single crystal brackets are noticeably clearer than polycrystalline brackets and hence are translucent [Figure 1]. Fortunately, both single crystal and polycrystalline brackets resist staining and discoloration.[4,5]

Polycrystalline zirconia brackets (ZrO), which reportedly have the greatest toughness amongst all ceramics, have been offered as an alternative to alumina ceramic brackets.[6] They are cheaper than the monocrystalline ceramic brackets but they are very opaque and can exhibit intrinsic colors making them less esthetic.[7] Good sliding properties have been reported with both stainless steel and nickel-titanium arch wires along with reduced plaque adhesion, clinically acceptable bond strengths and bond failure loci at the bracket/adhesive interface. However, Keith *et al*. found no advantage of zirconia brackets over polycrystalline alumina brackets with regard to their frictional characteristics. As the clinical performance of alumina ceramic brackets has continued to improve over recent years, zirconia brackets have become obsolete and only alumina ceramic brackets will be considered further.[3]

Figure 1: Intraoral image of monocrystalline (a) and polycrystalline (b) ceramic brackets

Koutaro Maki *et al*. developed a new orthodontic bracket with three slots using a zirconia firing working method that can add lubricate properties to the internal surface of the wire slots and external surface of the brackets and proposed a new orthodontic treatment system employing 0.012–0.014-inch NiTi archwires. The proposed new orthodontic treatment system showed a higher tooth movement rate in the early stage of leveling, and the mean treatment period until the completion of leveling was significantly shorter.[8]

PLASTIC BRACKETS

Plastic brackets were marketed in the early 1980s. Initially, constructed from acrylic and later polycarbonate, their acceptance by orthodontists as an esthetic alternative to metal brackets was short lived. Inherent problems were soon noticed, including staining and odors but more importantly their lack of strength and stiffness resulting in bonding problems, tie wing fractures and permanent deformation.[1]

In a simulated intraoral situation Harzer *et al*. reported higher torque losses and lower torquing moments with polycarbonate brackets compared to metal brackets. To compensate for the lack of strength and rigidity of the original polycarbonate brackets, high-grade medical polyurethane brackets and polycarbonate brackets reinforced with ceramic or fiber-glass fillers and/or metal slots have been recently introduced and are becoming increasingly

popular. Polycarbonate brackets with metal reinforced slots demonstrate less creep than conventional polycarbonate brackets although torque problems still exist. Approximately 15% loss in torque over 24 h has been observed with both ceramic reinforced and metal lined polycarbonate brackets. However, the performance of these brackets is better than polycarbonate brackets and they probably have the potential to challenge ceramic brackets with future development.[9] When comparing torque deformation characteristics of seven commercially available plastic brackets against stainless steel brackets, Sadat-Khonsari *et al*. showed that metal slot reinforced brackets were subjected to the lowest degree of deformation, followed by pure polyurethane, pure polycarbonate, and fiber glass reinforced polycarbonate brackets. Ceramic reinforced polycarbonate brackets showed the highest deformation under torque stresses. The addition of ceramic and fiber-glass in the plastic brackets also failed to improve the torque stability of the polycarbonate brackets and pure polyurethane brackets showed no significant difference from pure polycarbonate at optimal torque. A comparison with stainless steel brackets illustrated that plastic brackets are only suited for clinical application if they have a metal slot.[10]

SELF-LIGATING BRACKETS

Self-ligating brackets do not require an elastic or wire ligature, but have an inbuilt metal labial face, which can be opened and closed. Brackets of this type have existed for a surprisingly long time in orthodontics – the Russell Lock edgewise attachment being described by Stolzenberg in 1935.[11] Both active and passive self-ligating brackets have been developed depending on the bracket and arch wire interaction. Those with a spring clip that can press against the arch wire are active and those in which clip ideally does not press against the wire are called passive.[12]

The evolution of self-ligating brackets is shown in Table 1.

Advantages of self-ligating brackets:[13]

1. Secure and robust ligation
2. Less chairside assistance
3. Reduced friction between bracket and archwire
4. Enhanced efficiency and ease of use
5. Reduced overall treatment time
6. Efficient alignment of severely irregular teeth
7. Better plaque control and anchorage conservation
8. Reduced risk of operator and patient injury including "Puncture Wounds."

Characteristic features of Self-ligating bracket as per individual system

Speed bracket

SPEED is a fully pre-adjusted miniaturized edgewise appliance developed in 1980 that uses a super-elastic nickel titanium and are specifically designed for each individual tooth.[14]

Points of interest

1. Highly flexible nickel titanium spring clip gives exact 3-D tooth control
2. Extended range of activation due to energy stored in spring clip
3. Horizontal auxiliary slot upgrades segmental mechanics.

Advantages for the patient include it is smooth, rounded, simple for all patients to clean, comfortable as small in size as well as wingless design, esthetically appealing.

Activa bracket

In 1986, Dr. Erwin Pletcher developed Activa bracket ("A" company). Activa bracket had an inflexible, curved arm that rotates occluso-gingivally around the cylindrical bracket body. The arch wire is held by a strong clip that turns into a holding groove gingival to the arch wire, situating two straps labial to the wire and making a bracket that is fundamentally the same as mechanically to a molar tube with twin channel tops. All brackets have vertical slots behind the arch wire channel. A vertical slot is a valuable element in a bracket without Tie wings.[15]

Time bracket

In 1994 Dr. Wolfgang Heiser, developed the Time bracket which is similar in appearance to the SPEED bracket. It is described as hybrid self-ligating bracket. The Time bracket can be opened either with a dental probe or with its special instrument. The time bracket has a clip that turns into position around the gingival tie wing and pivots towards the occlusal rather than the gingival wall of the slot.[16]

Damon bracket

These brackets are introduced in 1996 by Damon.[17]

Damon SL

It had a slide, which moved vertically on the labial Surface of an otherwise fairly conventional twin tie-wing bracket. The slide clicked into a positive open or shut position and opened in a downward direction in both jaws to give a full view of the slot. These brackets were a major step forward, but had two problems; (1) the slides sometimes opened inadvertently and (2) they were prone to Breakage.[18]

Damon 2 bracket

The blemishes in the Damon SL brackets prompted the improvement of Damon 2 brackets (2000) which hold a

Table 1: Evolution of self-ligating brackets

Year	Bracket	Active/passive	Available	Mechanism
1935	Russel lock	Active	No	Circular thread opening
1972	Ormco Edgelok	Passive	No	Rigid sliding clip
1980	Forestadent Mobil-Lock	Passive	No	Rigid rotational disk
1980	Strite Industries SPEED	Active	Yes	Flexible spring clip
1986	"A" Company Activa	Passive	No	Rigid rotational arm
1996	AdentaTime	Passive	Yes	Rigid rotational arm
1996	"A" Company Damon SL	Passive	Yes	Solid indented slide
1998	Ormco TwinLock	Passive	No	Solid labial slider
2000	Ormco/"A" Co. Damon 2	Passive	Yes	Solid indented slide
2000	GAC In- Ovation	Active	Yes	Flexible spring clip
2001	Gestenco Oyster	Passive	Yes	Unique snap-on cap
2002	Forestadent Philippe lingual bracket	Passive	Yes	Flexible tie wing
2002	GAC In- Ovation R	Active	Yes	Flexible spring clip
2002	Adenta Evolution LT	Passive	Yes	Rotating flexible type clip
2004	Ultradent OPAL	Passive	Yes	Flexible hinge
2004	Ormco Damon 3	Passive	Yes	Rigid solid slide
2004	3 M Unitek SmartClip	Passive/active	Yes	Mesial and distally placed Flexible clips
2005	Ormco Damon 3 MX	Passive	Yes	Rigid solid slide
2006	Ultradent OPAL metal	Active/passive	Yes	Flexible Hinge
2006	Forestadent Quick	Passive	Yes	Snap flexible spring
2006	Lancer Praxis Glide	Passive	Yes	Removable multiplanar clip
2006	GAC system C	Passive	Yes	Flexible clip
2006	GAC inovation L	Passive	Yes	Flexible clip
2006	GAC innovation C	Passive	Yes	Flexible clip
2007	3m unitek clarity SL	Active/passive	Yes	Flexible clip
2007	American Orthodontics vision LP	Passive	Yes	Flexible clip
2007	Dentauraum discovery	Passive	Yes	Flexible lid
2009	Ormco Damon Q	Passive	Yes	Flexible sliding clip
2009	Ormco Damon aesthetic	Passive	Yes	Flexible sliding clip
2009	Smartclip sl3	Active/passive	Yes	Mesial and distal flexible clips
2010	Cabriolet	Active/passive	Yes	Flexible sliding clip
2011	Harmony lingual	Active/passive	Yes	Flexible sliding clip
2012	Sensation Ceramic	Active	Yes	Flexible sliding clip
2014	BioQuick	Passive	Yes	Flexible sliding clip
2014	Carriere SLX	Passive	Yes	Flexible sliding clip
2015	ProGate I	Passive	Yes	Flexible sliding clip
2016	Empower 2	Active/passive	Yes	Flexible sliding clip
2017	In-Ovation X	Active	Yes	Flexible sliding clip
2017	Lotus Plus DS	Active/passive	Yes	Flexible sliding clip

similar vertical slide activity and U-shaped spring to control the opening and closing, however, put the slide inside the shelter of the tie-wings. Joined with the metal injection molding manufacture, which allows closure tolerances, these advancements have totally disposed of incidental slide opening or slide breakage. Albeit special and excellent slide-opening devices are given these brackets.[18]

Damon 3 brackets (2004)

From previous Damon brackets, these brackets have three major changes-1. Upper tie wing and tooth colored composite resin base reduces the visual impact of the bracket. 2. A totally new vertically placed chair molded clip behind the slide. The slide is shut with finger pressure and has a positive tactile and audible signal when completely shut. 3. It is opened with an exceptional opening apparatus resembling a modified blunt dental probe.[18]

Damon 3MX brackets (2005)

These brackets [Figure 2a] are on the whole metal and have basically an indistinguishable mechanism from D3 with further refinements.[18] They have a vertical slot behind the archwire slot into which pre-assembled click in auxiliary hooks can be added to any brackets as required. Its advantages are easy-to-use slide component, Ultra-smooth self-ligation forms and rounded edges for the maximum bracket, patient

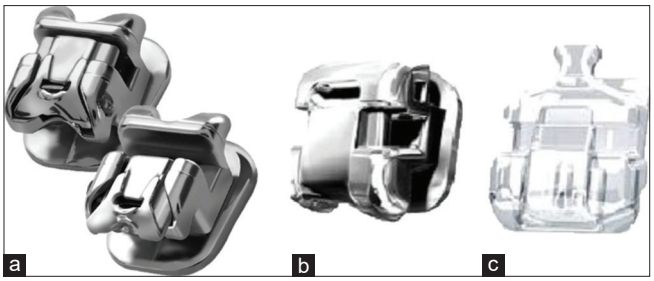

Figure 2: (a) Damon 3MX bracket (b) Damon Q (c) Damon Aesthetic

comfort has enhanced, contoured base design for strong, reliable bond retention.

GAC-Innovation bracket

These brackets are introduced by Micheal CAlpern in 2000. These are very similar to speed brackets in concept and design, but are of:[19]

1. Twin configuration
2. Bracket manufactured with metal injection molding
3. V–Tool (Tweezer) is used for opening the clip
4. Active clip which is made from cobalt chromium alloy is highly resistant to fracture
5. Slot Blocker: It prevents archwire from escaping from the bracket and enhances Torque Expression
6. Horizontal Slot: This Slot runs through the occlusal wings which can be used for Rotation and uprighting springs or Segmental wire
7. Super mesh Base: This houses a wide mesh over a tight mesh which enhances retention.

Smart clip

It is introduced and developed (3M Unitek) by Gary L. Weinberger in 2004. It consists of two nickel titanium clips, i.e., mesial and distal tie wings that open and close through elastic deformation of the material when the arch wire exerts a force on the clip. The bracket contains no moving door or latch. The feature of no moving doors or latches can eliminate problems such as sticking, spontaneous opening, or plaque build-up that are associated with other types of self-ligating brackets[Figure 3a].[20]

Smart clarity SL bracket (2007)

It is ceramic version of smart clip bracket with improved clip forces. [20]

Discovery brackets

It is developed by Dentaurum in 2007 using CAD– CAM technology [Figure 3b].[21]

Features:

1. Minimal size
2. Easy locking mechanism

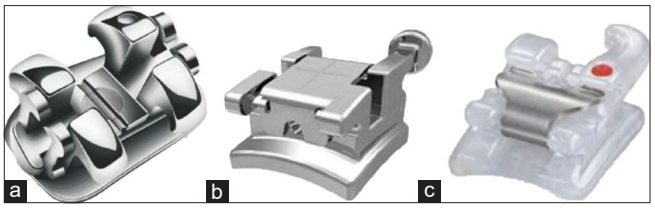

Figure 3: (a) SmartClip Bracket (b) Discovery bracket (c) Sensation active ceramic bracket

3. Revised bracket geometry to ensure that the lids always open straight. This prevents buckling of the lid
4. Super smooth surfaces provide excellent intraoral comfort for the patient.

Damon Q (2009)

These are the most recent variant of Damon framework, sliding component is intended to be simpler, more secure and more comfortable to the patient when opened and shut and resistant to the impacts of calculus accumulation. These brackets likewise smaller in all measurements than their predecessors and space have been found for horizontal and vertical slot. Spintec cool–opening tool [Figure 2b]. The new Damon Aesthetic bracket is a translucent passive self-ligation bracket with no metal insert [Figure 2c].[22]

Smart clip SL3 (2009)

It is like Smartclip bracket, distinction is less clip force reduction. Additionally accessible in adhesive precoated framework with fluoride discharge property.[23]

Harmony lingual self-ligating bracket system (2011)

Its framework creates completely modified bonding pads and mechanically shaped archwires that move teeth productively and precisely, as indicated by the company.[24]

Sensation active ceramic self-ligating bracket (2012)

it is created from a durable and translucent ceramic material and highlights a rhodium-covered treated steel clip. A one of the kind guide rail settles opening and shutting forces of the bracket clip, bringing about quicker archwire changes [Figure 3c].[25]

BioQuick self-ligating bracket (2014)

Forestadent's BioQuick self-ligating bracket presently includes a lower profile and rounder edges for enhanced patient comfort. The upgraded clip's thickness has been expanded by 20%, making it more strong and ready to withstand disfigurement while giving better control of angulation, rotation, and torque [Figure 4a].[26]

Carriere SLX self-ligating bracket system (2014)

The new Carriere SLX Self-Ligating Bracket system from

Henry Schein Orthodontics offers an advanced variant of the Damon solution with enhancements in bracket arrangement, torque control, and accuracy finishing. The bracket includes an amazingly low profile and occlusally opening doors; visual signs including six horizontal and five vertical references are intended to help guarantee exact bracket arrangement [Figure 4b].[27]

Empower 2 (2016)

An overhauled variant of Empower self-ligating bracket system, now known as Empower 2. New highlights incorporate micro-etched bonding pads, intended to enhance bond strength by 15%–30% over different bases, and a thicker clip to expand wire-seating power while staying away from clip disfigurement [Figure 4c].[28]

In-Ovation X (2017)

In-Ovation X, Dentsply Sirona's most recent expansion to its self-ligating In-Ovation line, holds a similar core design and treatment standards, with improvements including a streamlined shape and a diminished profile and occlusal impression. There is an updated encased-clip system and shut gingival bracket base will decrease the calculus develop that can hinder with clip function [Figure 4d].[29,30]

LINGUAL BRACKETS

No matter how vigorously esthetic labial brackets (e.g., plastic, polycarbonate, vinyl and ceramic brackets) or other moderately effective alternatives (e.g., Invisalign [Align Technology Inc., Santa Clara, Calif]) have been promoted over the years, many adults do not seek orthodontic treatment because of the perceived embarrassment of wearing braces.[31] To be able to serve such patients, the orthodontic community comes out with the ultimate esthetic solution – Lingual Orthodontics.

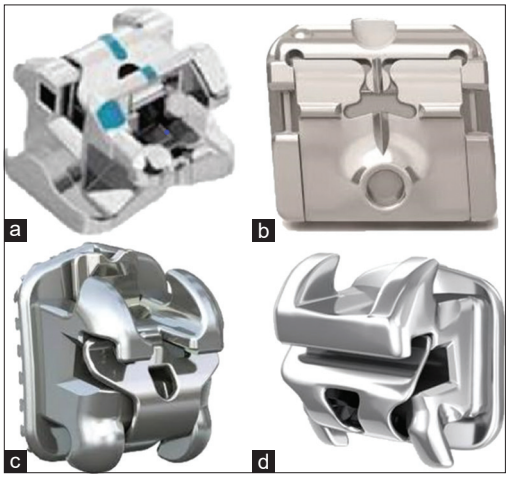

Figure 4: (a) Bio-Quick Bracket (b) Carriere SLX bracket (c) Empower 2 (d) In-ovation X

Lingual Orthodontics, apart from offering the esthetic benefit, also provides several mechanical advantages.[32] Since its inception in 1970, great advances have been made in the modality. At present, lingual orthodontics is a complete system in itself and encompasses accurate diagnosis, treatment protocol, clinical, and laboratory procedures. Among the unique features of this appliances were a bite plane incorporated in the maxillary anterior brackets, mesh bonding pads designed to adapt to the lingual surface of the teeth, and pre-torqued arch wire slots based on a conversion of commonly used labial torque values.[33]

The most significant change in design is the size of the bracket. The new lingual brackets are smaller and more closely adapted to the lingual vestibule. The dimensions of the incisor and canine brackets are 2.5 mm (width) by 1.5 mm (thickness).[34] The premolar and molar brackets have a thickness of only 1.5 mm. The shape of the bracket has also been dramatically changed. There are three small wings (two occlusal and one gingival) and a 0.018" x 0.025" slot for the arch wire. The absence of a hook and bite plane further reduce the overall dimensions of the bracket leading to greater patient comfort.[35]

BUTTERFLY SYSTEM

Making use of Andrew's original concepts was an important first step in the development of the Butterfly system. The Butterfly System is based on a new low-profile pre-adjusted bracket that features a vertical slot. The vertical slot adds versatility to the appliance by permitting the addition of a variety of auxiliaries. Hook or T-pins for elastics can be added to the vertical slot during treatment whenever they are needed. This eliminates the need to have brackets manufactured with hooks. A further enhancement to patient comfort and aesthetics is derived from the reduced profile or thickness of the bracket, its miniature Siamese twin design, and rounded tie-wings. Combining these features with the elimination of hooks results in an appliance that is more comfortable, esthetic, and hygienic.[36]

Features of the butterfly bracket system[37] There are seven unique features designed to improve on existing pre-adjusted appliance concepts:

1. Progressive posterior torque
2. Reversible 2nd premolar angulation
3. Preventative mandibular anterior torque
4. Mandibular anterior progressive angulation
5. Convertible molar tubes with -6° angulation pre-welded on the band, and
6. Added versatility for both non-extraction and extraction treatments

7. The versatile and indispensable vertical slot demonstrates a largely untapped potential.

IMPORTANCE OF THE VERTICAL SLOT

The addition of a simple vertical slot opens an entirely new realm of treatment options and auxiliaries. First of all, the elimination of ball hooks on the brackets significantly reduces the potential tissue impingement, reduces trapped food and plaque, while making arch wire tie-in easier. Besides, a simple T-pin can be added and subtracted anywhere along your appliance when elastics are needed. This virtually eliminates the need for Kobayashi ties or soldered hooks. In addition, a variety of other v-slot auxiliaries is already available including rotating springs, uprighting springs, and power arms for retraction. One of the simplest uses of the v-slot is for teeth that are blocked-out or ectopically erupted. In these instances it is nearly impossible to tie an arch wire into the brackets during early alignment, however, a steel ligature or elastic thread can be placed through the vertical slot to "sling-tie" out and around the arch wire [Figure 5].[38]

ELASTIC SLOT SYSTEM AND V-WIRE MECHANIC

Since precise torque transmission is not guaranteed with conventional steel brackets, elastodynamic bracket was constructed of NiTi alloy. The specific fashioning of the slot into a V-shape, in combination with a V-shaped wire, allows completely play-free guidance of the archwire into the slot, similar to the functional principle of a dovetail guide. The V slot in combination with the V wire showed no play and therefore allowed direct transmission of torque in the bracket [Figure 6]. The elastodynamic properties of the NiTi bracket promote more continuous transmission of moment and also set an upper limit to the magnitude of moment that can be applied. There is no deformation of the slot of elastodynamic brackets on application of torque because of the elasticity of the brackets. The system also allowed higher clinical tolerance if the angle of activation was not exact. At an angulation of 7°, the torque was 10 Nmm.[39]

Figure 5: Butterfly System features low-profile miniature bracket with vertical slot. Removable T-Pins or hook pins can be placed through vertical slots of any brackets when needed, eliminating integral bracket hooks

CUSTOMIZED ORTHODONTIC APPLIANCES

Recently, a novel computer-assisted approach has been introduced, in which customized fixed appliances (brackets) are made to fit each individual tooth for an individual patient to achieve the best possible alignment. It includes following systems.[40]

The Insignia system (Ormco, Orange, CA, USA) uses a customized slot that is cut into the bracket at the desired position. Bracket bases are standard; slots are custom created to produce the desired tooth movement throgh arch wire progression to a straight final archwire. The main advantage of this system is the customization of the bracket slot. Cutting a slot into a bracket blank is potentially more precise than a slot created by injection molding.[41]

Suresmile® system (Orametrix, Inc., Richardson, TX, USA) uses an optical intraoral scanner to acquire a three-dimensional digital model of teeth and brackets. Digital models are used to create a setup of teeth in the desired final positions. Customized arch wires are robotically formed to incorporate all necessary bends to exert forces and moments to achieve the desired position of teeth. Custom wires are used in non-custom brackets to achieve an individualized treatment outcome.[42]

Incognito™ system (3M-Unitek, Monrovia, CA, USA) combines individualization of bracket bases, slots, and archwires to create fully customized lingual orthodontic appliances. Bracket bases are individualized to the tooth anatomy and initial position of the tooth in the dental arch. Bracket slots are customized to produce ideal tooth movement, and wires

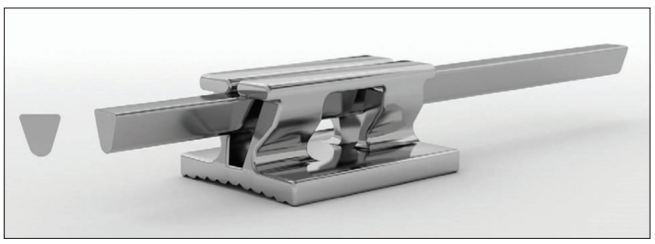

Figure 6: Design of the bracket differs in its slot geometry of a V slot and V wire. This achieves an accurate fit of the wire in the slot. Bracket allows for flexible bracket structures and the transmission of small, well-defined moments

are formed to minimize the overall thickness of the appliance in the mouth.[43,44]

CONCLUSION

The article summarizes the recent advancements in orthodontic brackets along with a detailed description of Ceramic brackets, the self-ligating bracket, lingual bracket, the new Butterfly system, elastic slot system, and customized orthodontic brackets. As of now accessible self-ligating brackets offer the exceptionally profitable combination of a great degree low friction and secure full bracket engagement and they are adequately powerful and easy to use to deliver most of the potential advantages of this sort of bracket. The V slot in combination with the V wire allows direct transmission of torque in new elastic slot bracket system. New three-dimensional technology in the design and production process allows manufacturers to produce brackets individualized to each patient to generate a theoretical ideal force system and produce the desired tooth displacement. As technology advances soon these brackets will also be obsolete and newer ones would take their place. The orthodontist should wisely choose which bracket system would be best for the selected case and should also fulfill the aesthetics requirements of the patient.

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Conflicts of interest

There are no conflicts of interest.

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