INTRODUCTION
Development is closely related with technology, which has widened the normal limits to human perception. "Paradigm shift" in the field more focuses on the soft tissue compared to the hard tissue. In this article we have broadly divided the recent trends into recent diagnostic aids, appliance design and the treatment strategies using accelerated orthodontics in adult patients.

ORTHODONTIC DIAGNOSTIC AIDS
Cone Beam Computed Tomography (CBCT) in orthodontics: Allows for improved diagnosis and treatment planning in specific applications:
- Management of impacted teeth and dental anomalies
- Diagnosis and assessment of dentofacial deformities—especially skeletal asymmetry
- Pre-surgical planning for orthognathic procedures and miniscrew placement

3D photography: Creates three dimensional extraoral image of patient that can aid in diagnosis and treatment planning specially in patients with dentofacial deformities.

Digital Models: there are various methods that can be acquired by intraoral scan, CBCT, by scanning an impression or plaster model. They represent as an efficient alternative to the plaster models.

LASERS (Light Amplification by Stimulated Emission of Radiation) in orthodontics: The most common lasers used in dentistry today are the CO2 laser, the Nd:YAG laser, the erbium lasers (Er:YAG and Er,Cr:YSGG), and the diode laser. It has been seen CO2 and Nd:YAG are not ideally suited for orthodontic applications. Erbium lasers are being extremely popular in dentistry today as they hold the singular distinction of being able to perform both hard and soft tissue procedures. But the diode laser seems to be most ideal for incorporation into the orthodontic specialty practice. Clinical application and classification of LASER is shown in figure. 1 and table 1.

RECENT ADVANCES IN APPLIANCES
Recent trends in appliance are tabulated in figure 2 and are further discussed below:

Self-ligating brackets: These brackets are not new, but have gained popularity recently. They do not require an external auxiliary ties to ligate the arch wire into the bracket slot.

Customised appliances: Orthodontic appliances that are custom made to fit each individual patient’s teeth, and designed to move teeth from their initial malocclusion to a pre-determined outcome.

Invisalign® is the first customized appliance
which uses a digital set up of the patient’s teeth to plan the final outcome and for the fabrication of the appliance. Main advantage of this appliance is invisibility compared to the available brackets and it is easier to maintain oral hygiene.

**Suresmile® system:** In this system an optical intraoral scanner is used to acquire a three dimensional digital model of teeth and brackets. Digital models are then used to create a set up of the 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. And these customized arch wires are used in non custom brackets to achieve an individualized treatment outcome.

**Incognito™ system:** Comprise of fully customized lingual bracket system. Laboratory or digital set up is used to predetermine the desired positions of teeth. This system has been shown to be highly precise, and is an esthetic treatment option that offers greater control over tooth movement than clear aligners in many cases.

**TEMPORARY ANCHORAGE DEVICES (TAD)**

Temporary anchorage devices have always played a crucial role in orthodontics. Irrespective of the biomechanics incorporated into the various systems to minimize the anchorage loss in all the planes, it continues to be an area of concern. The introduction of TAD’s into the field of orthodontics has revolutionized the scope of treatment possibility. TAD’s serve as an absolute anchorage to move the teeth in the desired directions, which is impossible to be achieved with the help of conventional treatment alone.

**ADULT ORTHODONTICS**

With increase in number of adult patients seeking orthodontic treatment, the demand for esthetics during the orthodontic treatment has gained the momentum. Clear aligners and lingual orthodontic treatment satisfied a large range of patient's expectations. On the other hand Clear aligner uses a set of aligners to correct the malocclusion from its initial phase to the final. It takes into advantage the possibilities of CAD-CAM imaging. Adult treatment can be categorized
as shown in Table 2.

| COMPREHENSIVE TREATMENT | ADJUNCTIVE TREATMENT | SURGICAL ORTHODONTICS |
|-------------------------|----------------------|-----------------------|
| Adults receiving comprehensive treatment are the main candidates orthodontically enhance appliances the prime examples being clear aligners lingual appliances, and ceramic facial brackets | Adults receiving adjunctive treatment are the candidates who need another treatment together with the primary treatment. | Surgical first approach is used widely |

**Table 2. Special Consideration in Orthodontic Treatment of Adults**

**ACCELERATED ORTHODONTICS**

Many researches are underway on shortening the span of treatment, namely the corticotomy, Accelerated osteogenic orthodontics, low level laser, low frequency mechanical vibrations shown in Table 3, these methods have not gained wide acceptance due to the invasiveness and the armamentarium involved. Biological methods for accelerating tooth movement, involving the prostaglandin E (PGE), Receptor activator of nuclear factor kappa-B ligand (RANKL), Interleukin etc are subjected to large number of research at present times.

**Modified Corticotomies:** Less invasive surgical procedure--multiple vertical incisions without flap reflection.

**CONCLUSION**

Today’s challenge in orthodontics is to improve the quality of oral health while satisfying the developing needs. In order to encounter the new challenges and to upgrade the feature of our present treatment needs the combined efforts of dental education, dental research, and dental practice will be needed. The time is not far away when there will be no impressions, no plaster models, no tracing papers, and no pliers in the orthodontic office. But it is important that these tools should be cost effective, so that benefits of these technologies can be extended to all sections of society including economically disadvantageous population and those living in remote locations.

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