Introduction to Prosthodontics 3

purposes. Bourdet of Paris was the first to try a gold base.

In 1757 **Bourdet** suggested the use of silk ligatures attached to natural teeth to retain extracted teeth. Philip Phaff advocated the use of plaster of Paris for making impressions.

The materials for making teeth included bones, ivory tusks from hippopotamus and walruses, human teeth from corpses and gold. Human teeth were found to be costly. Animal teeth were unstable towards corrosive agents in saliva and elephant ivory and bone contained pores that were easily stained. Mineral teeth or porcelain teeth greatly accelerated the end to the practice of transplanting freshly extracted human teeth.

After decades of effort, the Europeans mastered the production of fine translucent porcelains comparable to porcelains of the Chinese (by the 1720's). The use of feldspar to replace lime as a flux and high firing temperatures were both critical developments in fine European porcelain. In approximately 1774, a Parisian apothecary **Alexis Duchateau** with the assistance of a Parisian dentist Nicholas Dubois Dechemant (Fig. 1.3) made the first successful porcelain dentures at the Guerhard porcelain factory replacing the stained and malodorous ivory prosthesis of Duchateau. Dubosis Dechemant continually improved his porcelain formulations and



Fig. 1.3. Dubois Dechemant.

received French and British patents. Nicholas Chemant characterized the dentures as *incorruptibles et sans odeur* (imperishable and odorless) later the descriptive toward incorruptibles became the term for the porcelain denture. **Jacques Gardette (1778)** developed the first adhering upper prosthesis by accident (Fig. 1.4). He had placed an upper prosthesis from the enamel of hippopotamus teeth into the maxilla of a female patient without springs. He found out later that the prosthesis was well retained without springs.



Fig. 1.4. Jaques Gardette.

In 1789 John Greenwood (Fig. 1.5), George Washington's dentist, carved a denture from hippopotamus bone and fitted it with 8 human teeth. Samuel Stockton White, in the later part of the nineteenth century introduced the SS White company. This company developed many tooth forms. (Stockton also introduced Dental Cosmos, a dental Journal).

In 1808 individually formed porcelain teeth that contained embedded platinum hooks were introduced in Paris by **Giuseppangelo Fonzi** (Fig. 1.6). These were called dents terro metalliques. The firing of porcelain teeth crossed the oceans into North America in 1817 through Antoine Plantou (who emigrated from Paris).

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an impression material that remained plastic even after setting. It was agar-agar. The first methacrylate dental preparation in England appeared in 1935 as Kallodent and in 1936, the Kulzer Company in Frankfurt and Main brought out its own patented thermoplastic paladon, which could be polymerized by liquid monomer and powder polymers in offices. In 1940, methylmethacrylate (MMA) was introduced and it soon replaced vulcanite as the principal denture base material because of its improved esthetic qualities and ease of manipulation. Elastic impression materials were developed from synthetic rubber by S L Pearson of the University of Liverpool in 1955.

MULTIPLE CHOICE QUESTIONS

- 1. "Dents terro metalliques" refers to
 - a. Porcelain dentures
 - b. Porcelain teeth with platinum hooks
 - c. Natural teeth attached with silk ligatures
 - d. None of the above
- 2. The first successful porcelain dentures were made by
 - a. Ambroise Pare
 - b. Guiseppangelo Fonzi and Delabarre
 - c. Duchateau and D Chemant
 - d. John Greenwood
- 3. In 1808 _____ published a method for the manufacture of individual teeth with platinum hooks fired into them
 - a. J.C.F. Maury
 - b. Fonzi
 - c. J. Gardette
 - d. None of the above

4. S.S white is credited with

- a. Developing tube teeth
- b. Introducing the Dental news letter that gave rise to Dental Cosmos
- c. Being George Washington's dentist
- d. Introducing gold clasps

- 5. The "tube teeth" were introduced by a. S.S. White
 - b. Claudius Ash
 - c. Gardette
 - d. Gysi
- 6. In _____, F.A. Wienand founded the first continental dental manufactory capable of offering commercial products a. 1893 b. 1911
 - c. 1908 d. 1907
- 7. The typal form theory was introduced by a. Gysi b. Leon Williams
 - c. Ash d. T.W. Evans
- investigated physiology of the TMJ with the help of photography

 Spee b. Luce c. Balkwill d. Bonwill

FAQs

- 1. Define prosthodontics. What are its objectives ?
- 2. Branches of prosthodontics. Define.
- 3. Difference between a prosthesis and appliance.

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each type merging with the other without any line of demarcation.

In order to determine what type a patient belongs to, the operator imagines two lines one on either side of the face, running about 2.5 cm in front of the tragus of the ear and through the angle of the jaw.

If these lines are almost parallel, the type is square, if they converge towards the chin it is tapering, and if it is diverging it is ovoid.

The facial form can also be determined using a Trubyte tooth indicator.

Facial Profile

Class I–normal

Class II-retrognathic

Class III-prognathic

Facial profile is determined by considering the glabella, point A and the pogonion (Fig. 2.1).



Fig. 2.1. Face profile.

Facial Expression

An absence of facial expression may indicate a loss of muscle tonus. A mask-like expression may be due to numerous surgical procedures. It can also occur in patients with central nervous system (CNS) disorders like paralysis agitans, or endocrine disorders like hypothyroidism.

Complexion

Pallor may be indicative of nausea, hypothyroidism or nephrosis. It also occurs in patients with systemic debilitating diseases. Ruddy complexion may be seen in polycythemia, chronic alcoholics or neoplasms.

Bronzed skin may be seen in Addison's disease and may be seen in patients who have received radiation therapy. Lemon-yellow complexion occurs in patients with jaundice due to gall bladder, bile duct or hepatic disorders.

Hair

Hair may be black, blonde, brown, brunnette, white or black.

Eyes

Eyes may be black, blue, brown, gray hazel. The shade of hair and eyes in selection of teeth is irrelevant.

Lip

Lip can be: (i) supported, and (ii) unsupported

Lip Support. If the tissues around the mouth have wrinkles and the rest of the face does not, then significant improvement is possible. The wrinkles can be avoided by adequate support provided by the placement of anterior teeth in the correct anteroposterior position. If the wrinkles are long standing (for e.g. vertical lines in the lower half of the lip), then significant improvement may not occur. In an attempt to provide support, if the upper anteriors are placed too far labially, unfavourable leverages may be exerted on the denture.

Lip Mobility

Class I–normal Cass II–reduced Class III–paralysis.

Lip Thickness. In patients with thin lips, any slight change in the labiolingual position of teeth makes an immediate change in the lip contour. Thick lips give a little more room for alteration in the tooth position before obvious changes occur in lip contour.



Fig. 2.9. Different types of V shaped ridges (high to low ridges).



Fig. 2.10. Different types of knife-edged ridges.

palatine foramina marked by the incisive papilla lies on the anterior part of the median palatine suture. Traumatic forces should not be applied to this area. In its anteroposterior extent, the median palatine suture can vary from a midline depression to an extensive undercut torus palatinus. The suture is covered by relatively thin mucoperiosteum. Classifying palatal throat form is very important because of the wide range of three-dimensional movements occurring during speech and deglutition. Movement of the soft palate at the vibrating line in the midline involves a thin, tendon-like band, the palatine aponeurosis, which supports the palatal muscles, strengthens the palate and attaches anteriorly to the posterior border of hard palate. In 1958 House classified palatal throat form into:

Class I. The palate has a gradual inferior slope with less active movements at the junction of the hard and soft palates and can therefore be covered beyond the junction to enhance extension and seal. It is the most favourable condition.

Class II. has a more acute slope and is more active than a class I palate but generally

demonstrates less movements than Class III. The soft palate turns downward approximately at an angle of 45°.

Class III. slopes down sharply at an angle of about 70°. Denture base impingement can lead to soreness, loss of border seal and gagging. The space available for the posterior palatal seal is minimum.

Lateral Throat Form

In 1932, Neil described the lateral throat form as the contour of the hard lingual surface of the mandibular ridge in the molar area and the velum-like tissue distal to the mylohyoid ridge in the retromylohyoid fossa as it functions under the influence of the tongue.

Lateral throat form is classified according to the extent of the anterior movement of the retromylohyoid curtain as the tongue is extended anteriorly beyond the vermilion border of the lower lip. (With the index finger passively contacting the curved wall of the mucosa in the retromolar fossa with the tongue at rest, the patient is asked to protrude the tongue).

Class I. Minimal or no pressure is exerted on the finger (Fig. 2.11).

Class II. Any position of the tissues between the extremes (Fig. 2.12).

Class III. Heavy pressure is placed on the finger. This is important for ascertaining the border extension in this area. Overextension in the retromylohyoid area results in loss of border seal, displacement of the denture or soreness that readily radiates to the floor of the mouth, throat and neck (Fig. 2.13).

Jaw Relationship

Smith (1951) described jaw relationship as the anteroposterior position of the mandibular residual alveolar ridge relative to the maxillary residual ridge when the jaws are in centric relation (Fig. 2.14).