SFHOH27

Design and Manufacture Orthodontic Appliances and Casts

Overview

This standard describes the design and manufacture of orthodontic appliances and casts using manual and digital techniques. The standard includes preparation, production of casts and records, functional orthodontic appliances, fixed orthodontic appliances and removable orthodontic appliances

The term 'client' is used to mean the member of the oral health care team who has prescribed the custom-made prosthesis. The individual is the one for whom the appliance is made or the parents/guardians/carers where appropriate.

The design and manufacturing process of dental appliances may be carried out in a regulated dental laboratory within a variety of settings.

Users of this standard must ensure compliance with up-to-date regulations and guidelines.

Performance criteria

You must be able to:

1. communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
2. collate and confirm accuracy of all specification information required for appliance design and manufacture with relevant others
3. select components, materials, and equipment, ensuring they are fit for purpose.
4. set up and operate manufacturing equipment in accordance with the specification
5. manufacture orthodontic appliances and or casts using suitable manual or digital techniques adjusting manufacturing processes as necessary.
6. devest or retrieve the manufactured product using an appropriate method which releases the item without causing damage
7. ensure that the manufactured product meets specifications and make necessary adjustments.
8. monitor the manufacturing process and adjust as required
9. clean and finish the restoration, prepare and package it safely for dispatch together with instructions for the individual and client
10. dispose of waste in accordance with all relevant legislation, guidelines, and workplace procedures
11. complete and store all documentation in accordance with relevant legislation, guidelines, and workplace procedures

Knowledge and understanding

You need to know and understand:

1. how to communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs.
2. the importance of applying standard infection control precautions and consequences of poor practice.
3. the principles, uses, methods, techniques and equipment involved in digital design and manufacturing.
4. skeletal anatomy, tooth morphology, orofacial musculature and temporomandibular joint function and movement aligned with orthodontic appliance construction.
5. the principles of balanced articulation and occlusion and their effects on orthodontic appliances including the proper selection and use of articulators, occlusion records, and movement records.
6. the classification, aetiology, including oral cavity disorders and diseases and the physiological effects of malocclusions.
7. growth and eruption patterns of deciduous and permanent teeth including the physiological changes related to tooth movement, growth, and development of maxilla and mandible.
8. the aims, objectives and relationship of the differing stages of orthodontic treatment.
9. the principles of cephalometric measurement and analysis, including skeletal patterns and incisor relationships.
10. the application and magnitude of forces in tooth movement and mandibular growth including methods of activation, reactivation, fitting, adjustment and modification.
11. the principles of orthodontic appliance and cast design and manufacture including the equipment and materials required for different types, components and functions. (Working, study, functional, fixed, and removable).
12. methods and material consequences of joining alloys including reasons for joint failure.
13. the role of study and working casts in design, manufacture, and positioning of appliance components.
14. identification and selection of pre-formed components, methods for assessing suitability, and effects of modifying manufacturer products.

15. the importance of baseplate, guideplane, and biteplane design and manufacture.
16. techniques for bending, soldering, welding, and polymeric application.
17. the methods used for cleaning, finishing, and polishing techniques for orthodontic appliances.
18. curing methods, their effects on materials, and appropriate application situations.
19. legal and physical implications of modifying manufacturer products and ensuring quality assurance.
20. methods for assessing safety, aesthetic, functional, and clinical acceptability of appliances.
21. how to clean and finish the restoration, prepare and package it safely for dispatch together with instructions for the individual and client
22. different methods of waste disposal and how to apply these
23. the importance of updating documentation and storing individuals records safely and securely

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