OH31 2012 Design and manufacture obturators

OVERVIEW

This standard focuses on the design and manufacture of obturators. Obturators are designed to replace the roof of the mouth and related areas, up to and including supporting the orbit of the eye. Obturators may include a set of complete or partial dentures within their design and also be used in the rehabilitation of patients requiring facial prostheses.Obturators are used to correct congenital problems, such as cleft palates, or for acquired defects, such as when tissue has been removed due to the presence of tumours. Obturators may be permanent as for most congenital problems, semi-permanent or temporary including when there is a need to make an obturator rapidly following emergency surgery, or when a patient's existing denture is used as a temporary obturator. Due to the complexity of the patient's needs and of the related work, it is necessary for the technician to work closely with other members of the oral healthcare team.Obturators may be made completely from polymeric materials, from polymeric with some metallic components, such as locking mechanisms for retention in the mouth, or with a metallic alloy framework, such as in conjunction with dental implants. It is vital that obturators fit the patient exactly as otherwise food and drink will escape through a patient's nose. Obturators should restore a natural appearance in colour, shape and size; fit the patient's mouth comfortably, be retained in place in the patient's mouth, should not attract a build-up of food debris and facilitate speech. In order to manufacture a prosthesis which meets these aesthetic and functional requirements, you need to have an accurate cast, and have, as far as is possible given the nature of the problem, an accurate record of the relationship between the patient's upper and lower jaw.The term â€˜client' is used to mean the member of the oral health care team who has prescribed the custom-made prosthesis. The patient is the individual for whom the custom-made obturator is being made or the parents/guardians of the patient when s/he is a new-born child. Due to the nature of the oral health problems that require the development of obturators, dental technologists will tend to work closely with clients, patients and other members of the care team in their development. This requires good communication skills with clients, patients and other members of the care team alike.Users of this standard will need to ensure that practice reflects up to date information and policies.Version No 2

KNOWLEDGE AND UNDERSTANDING

You will need to know and understand:

1. the skeletal anatomy, physiology of the head and neck and tooth morphology
2. the structure, function, and movement of the oro-facial musculature including the tongue and temporomandibular joint

3. disorders and diseases affecting the oral cavity
4. the aetiology and classifications of malocclusions
5. the physiological and pathological changes associated with the ageing process and trauma related to the oral environment
6. the importance of retention of the periodontal ligament and the changes in proprioception due to loss of periodontal ligament
7. infections of the jaws and their treatment
8. the effects of oral disease on prosthesis and appliance design and function
9. oral malignancy and the surgical and medical management of oral malignancy
10. the principles of radiotherapy and chemotherapy and their effects upon device design and function
11. the preoperative device design and manufacture
12. the effect of treatments on materials selection, appliance design and function, and manufacturing techniques; radiotherapy treatment appliance manufacture and use
13. handling radioactive material
14. principles of tissue transfer, structure of skin, clinical methods of tissue transfer, design principles of appliances used in tissue transfer
15. surgical reconstruction
16. post treatment anatomy and physiology
17. the broader factors (sociological, behavioural, environmental and economic) that contribute to oral health and illness
18. the physical and functional needs of the patient in relation to soft tissue loss in the oral cavity
19. the emotional response by the patient and those close to the patient in relation to soft tissue and tooth loss
20. the role of obturators in the restoration and maintenance of:
    1. tissues
    2. tissue support
    3. aesthetics
    4. phonetics
    5. function of occlusion and the temporomandibular joint
21. the importance of restoring and maintaining the occlusal vertical dimension
22. the benefits and restrictions of immediate tissue replacement in the provision of removable prostheses
23. the use and need for transitional removable prostheses
24. the use of resilient liners and tissue conditioners
25. the design limitations of large anterior undercuts and pre-existing dental conditions
26. retention and stability
27. aesthetics and phonetics
28. articulation
29. the principles of obturator design
30. the classification and sub-classification of materials on the basis of chemical composition and internal structure
31. the mechanical, physical, thermal, chemical and biological properties of materials
32. products for cast and mould manufacture
33. waxes used in the manufacture of removable prostheses
34. dental polymers
35. structural features of polymer chains
36. denture base polymers
37. dental alloys
38. artificial tooth materials
39. impression, duplicating and cleaning materials

40. implantology and osseo-integration
41. resilient materials
42. methods of developing, maintaining and improving communication and information relating to the provision of custom-made dental devices
43. the importance of communicating with individuals at a pace, in a manner, and at a level appropriate to their understanding, needs and preferences, whilst maintaining their dignity and choice
44. methods of protection against contamination and infection control when handling received impressions and other items which may have been in the mouth, or which are intended to be placed in the mouth; why it is important to do so
45. the purpose of personal protective equipment
46. the range of equipment used in the design and manufacture of dental devices; methods of using equipment and materials safely including the use of chemicals and other hazardous substances; methods of storing different equipment and materials safely and securely; methods of cleaning and maintaining different types of equipment and your role in this
47. the reasons for maintaining records throughout the process and of clearly identifying the products during the manufacturing process
48. organisational procedures and requirements for the recording of information about incoming work, work in progress and work delivered to clients, and the purpose of this
49. principles of quality assurance including effective recording and sampling; processes and procedures for quality assurance in your workplace
50. methods of setting and calibrating equipment and of testing that this is correct
51. the effects of modifying manufacturers' products to meet laboratory requirements on the physical properties of products and on quality assured products, and the legal implications of poor manufacturing
52. legal requirements of the contract of employment, confidentiality and employers' regulations
53. health and safety at work legislation and related procedures and liability; principles of and how to apply, legislation and regulations relating to the manufacturing of devices
54. the role and obligations of members of the dental team and the regulatory functions of the General Dental Council

PERFORMANCE CRITERIA

You must be able to do the following:

1. discuss and agree with the different members of the care team the patient's healthcare needs and the requirements of the obturator design
2. attend and contribute effectively to care planning meetings communicating effectively throughout with other members of the care team
3. communicate clearly and appropriately with the patient throughout the process
4. offer appropriate support to the patient recognising the difficulties they are experiencing
5. seek feedback from the patient on the developing design and fit of the obturator and how it can be improved from their point of view
6. effectively clean the returned occlusal registration rim and baseplate and transfer registration information accurately to the cast

7. mount the cast on an appropriate articulator, articulate it correctly and consistent with any available occlusal registration information and record the necessary information correctly
8. examine the prescription and cast and select material for replacing soft tissues and teeth that are of the appropriate:
    1. shade
    2. shape
    3. size
    4. type
    5. cuspal forms of natural dentition
9. make any required adjustments to match the patient's remaining oral cavity and natural dentition
10. shape and contour the wax that will form the basis of the soft tissue consistent with:
    1. the patient's musculature
    2. lost tissues
    3. the addition of any additional retentive components
11. position and attach any prescribed artificial teeth in a manner that:
    1. produces occlusion and articulation appropriate to the patient's recorded jaw relationship
    2. produces the required aesthetic appearance
    3. produces an obturator that maximises retention, stability and support and that eliminates leakage
    4. maximises masticatory efficiency
    5. facilitates phonetics and speech
12. confirm that the trial obturator conforms to the prescription and planned design and is comfortable for the patient
13. clearly and accurately identify trial obturators with the patient's unique reference and date of production
14. effectively clean the trial obturator and return it safely to the client at the agreed time
15. effectively clean returned trial obturators and identify from the client's instructions any modifications that are required
16. check returned obturators for problems with soft tissue replacement or teeth and make any adjustments that are necessary
17. fit the returned obturator to the cast if it needs to be modified, articulate it if this is required and make the necessary modifications
18. repeat the processes of modifying the obturator and returning it to the client for a try-in until a satisfactory obturator is achieved
19. evaluate the prescription, the casts, the design and the modified trial obturator and decide:
    1. which cast to use for processing the final obturator
    2. the nature and shaping of the replacement soft tissues
    3. how the occlusal load should be distributed in the final obturator
    4. the degree of resilience required of components within the final obturator
    5. the need for spacers and whether pre-formed or custom-made spacers are appropriate
    6. the flasking technique to be used
20. identify the components that are required and place them on the selected cast in a position that is correct for:
    1. the design
    2. the path of insertion of the obturator
21. place the agreed wax trial obturator onto the cast and accurately transfer the information on soft tissue replacement and tooth position and components from the try-

in onto the cast

22. rewax, shape and contour the supportive wax consistent with:
    1. the patient's musculature
    2. the lost tissues
    3. the addition of any additional retentive components and seal the trial obturator to the cast
23. select and prepare mould material that is appropriate to:
    1. the complexity of the obturator
    2. the preferences of the client and of the patient
    3. cost
24. construct a mould of the appropriate size and shape for converting the wax trial obturator to polymeric material
25. eliminate wax from the mould and prepare the surfaces of the mould and the artificial teeth for the introduction of polymeric materials
26. add any required spacers to create the correct size of void for soft lining if this has been prescribed and block out components when this is necessary
27. select material to manufacture the trial obturator of a type and colour which is compatible with:
    1. the other materials in the obturator
    2. the strength of the finished obturator
    3. the aesthetic requirements of the finished obturator
28. prepare in the correct ratio the required quantity of polymeric material and introduce it into the mould in a way that is consistent with how the material will be processed
29. determine the need for and perform a trial closure when using conventional packing, making additional modifications to form the resilient lining until the final required obturator is produced
30. process the polymeric material for the correct length of time at the correct temperature
31. release the processed obturator from the mould without causing damage to it and trim any excess material
32. select methods, materials and equipment for trimming, finishing and polishing the final obturator that are appropriate to its type and the materials used to make it
33. fix casts on articulating plaster and reposition them on an articulator
34. assess the articulated obturator, confirm that the shape of the soft tissues and the occlusion are appropriate to the prescription and the patient's remaining tissues and dentition and make any necessary adjustments
35. trim the obturator to the required shape and dimension consistent with:
    1. relevant anatomical features
    2. the required extension of the base
36. remove spacer medium when hollow-box obturators are being made and completely seal the hollow-box
37. polish the obturator to create smooth and polished non-fitting surfaces and rolled borders
38. evaluate the finished obturator for:
    1. its quality and freedom from defects
    2. functional effectiveness to the design
    3. fit to the cast
    4. leakage if it is a hollow-box obturator
    5. compliance with the prescription
39. correctly identify the finished obturator with the patient's unique reference and date of production
40. effectively clean the finished obturator, prepare and package it safely for despatch together with instructions for the patient and client

41. make complete, accurate and up-to-date records relating to the identification, components and manufacture of the obturator and store the records in the correct location consistent with relevant legislation
42. provide Statement of Manufacture for the appliance as required under current regulation

ADDITIONAL INFORMATION

This National Occupational Standard was developed by Skills for Health. It replaces DT22.This standard links with the following dimension within the NHS Knowledge and Skills Framework (October 2004):Dimension: HWB9 Equipment and devices to meet health and wellbeing needs