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College of Dental Surgeons, Singapore
In conjunction with College of General Dental Practitioners, Singapore

Best Practice Manual for common TOSP Procedures in Dentistry

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1. INTRODUCTION

Medisave, introduced in April 1984, is a national medical savings scheme which helps individuals put aside part of their income into their Medisave Accounts to meet their future personal or immediate family's hospitalization, day surgery and certain outpatient expenses. The Table of Surgical Procedures (TOSP) is a patient financing tool to identify procedures which qualify for use of Medisave funds as well as the respective limits of withdrawal.

Since 2005, the use of Medisave was extended to private dental clinics for the financing of procedures in the TOSP done in the clinic premises. As the TOSP was last revised in 1992, many new procedures in common practice today were not in the TOSP. Similarly, some of the procedures had become obsolete. Interpretation of some codes was difficult. Much of the ambiguity of has been addressed in this latest revision of the TOSP.

This Best Practice Manual is a College of Dental Surgeons, Singapore project, done in collaboration with the College of General Dental Practitioners, Singapore, based on an initiative from the Ministry of Health. The purpose of this manual is to provide dentists with a set of professional guidelines to some of the commonly used TOSP codes in dental clinics. The Ministry of Health has a set of audit guidelines which will make reference to this Best Practice Manual. Procedures submitted for Medisave claims should be consistent with the recommendations in this manual.

Documentation of each surgery with detailed clinical notes and where applicable/recommended, radiographs and clinical photographs preoperatively and postoperatively are recommended as a good clinical practice. Such radiographs and photographs should have an embedded patient identifier and date. Where commercial implants and graft materials are used, the batch identifier, expiry date and other relevant information must be entered into the patient's record. Thorough documentation will assist greatly in patient management as well as in clinical audits.

2. HOW TO USE THE MANUAL

A list of procedures done by dentists including oral and maxillofacial surgeons was extracted from the main TOSP (*TOSP* tab) in the attached MS Excel file. While we attempted to be as complete as possible, the list is not exhaustive and non-inclusion of any codes into this Dental TOSP does not preclude a dental practitioner from using them (*Complete Dental Codes* tab).

Within the Dental TOSP, the committee has recommended a list of procedures that are best done in an Operating Theater instead of a dental clinic (*OT Codes*). These are the more complex surgeries that may require advanced facilities and staff expertise not normally found in a dental surgery. This Best Practice Manual does not cover these procedures. However, this recommendation does not imply that procedures that are not included in this list should not be done in an operating theatre.

Of the remaining procedures, dentists may choose to offer patients the choice of performing the surgery within their clinics or in an operating theatre in accordance to their clinical judgment and patient preference. The committee has selected 57 codes that may be commonly used or misinterpreted and written guidelines pertaining to their use in claiming for Medisave funding. These guidelines will be used in conjunction with the audit guidelines issued by Ministry of Health.

3a. ENDONDONTICS: ENDODONTIC SURGERY

Code	Table	Description	Guideline
SF708T	2C	Tooth (Single-Rooted), Various Lesions, Peri-radicular Surgery	Surgery performed on the root of an anterior tooth, including: • apicoectomy (root resection, retrograde preparation and retrograde filling) • repair of root perforation or resorptive defect • retrieval of extruded root filling material or broken instruments Pre-operative and post-operative radiographs are necessary for standard of care.
SF818T	**3A**	Tooth (Multiple-Rooted or more than 1 tooth), Various Lesions, Peri-Radicular Surgery	Surgery performed on the root(s) of a posterior tooth or on the roots of 2 or more teeth, including: • apicoectomy (root resection, retrograde preparation and retrograde filling) • repair of root perforation or resorptive defect • retrieval of extruded root filling material or broken instruments • root amputation of a diseased or cracked root on a multi-rooted tooth • hemisection on a multi-rooted tooth to remove the diseased or cracked root and associated part of crown. Pre-operative and post-operative radiographs are necessary for standard of care.

General Principles

Through the introduction of magnification with the surgical operating microscope, use of microsurgical instruments, ultrasonic tips and biocompatible root-end fill materials, refined principles of soft tissue management and enhanced principles of wound closure, modern surgical endodontics has emerged as a highly predictable procedure compared to traditional endodontic surgery (Tsesis et al 2009, Setzer et al 2010). Retention of the natural tooth structure is still the goal of quality dental care

and many previously root-treated teeth that appear to be well-done, yet exhibit adverse signs or symptoms, are viable candidates for endodontic surgery. Surgical intervention is not a substitute for failure to manage properly the root canal system non-surgically, to assess thoroughly the periodontal status, and to ignore the shortcomings of the coronal restoration.

Indications and contraindications
Peri-radicular surgery may be considered in the following situations:
- Root canal re-treatment has been carried but tooth is still exhibiting signs and symptoms of periapical disease.
- Root canal re-treatment is not feasible due to:
  - presence of a large post which may render the tooth non-restorable if removed
  - calcified or obliterated canals
  - presence of separated instruments not retrievable by non-surgical endodontic treatment
  - perforations or resorptive areas not accessible to repair by non-surgical endodontic treatment

Contraindications to surgical endodontic procedures include:
- Patient with significant medical conditions, e.g. uncontrolled diabetes, leukemia or cancer etc
  Teeth that are unrestorable, e.g. extensive caries, inadequate ferrule for coronal coverage that cannot be improved with crown lengthening
- Teeth with poor periodontal support, e.g. very short root, extensive gingival recession or with moderate to severe marginal periodontitis
- Poor surgical access, e.g. due to limited mouth opening

Dental operating microscope (DOM)
Use of a DOM is necessary during endodontic surgery as it enables easier identification of root apices and decreased angles of root resections, which help to conserve cortical bone and root length. In addition, it can help to identify causes of endodontic failure such as isthmus, lateral canals, unfilled canals, perforations, cracks and fractures, which can affect the success of endodontic surgery if left untreated. Use of a DOM or endoscope for endodontic surgery has been shown to achieve higher success rates compared to the use of loupes or without visual aids (Setzer et al 2012).

Flap management
A semilunar flap is no longer recommended for endodontic surgery because of poor surgical access and scar formation (Kramper et al 1984). Flap designs that are commonly used now include the intra-sulcular full thickness flap and muco-gingival flap.

Root resection

There is no consensus on the how much root resection is necessary but at least 2-3 mm has been recommended (Gilheany et al 1994, Kim & Kratchman 2006). A 0 degree or almost 0 degree bevel is preferred in order to decrease the number of exposed cut dentinal tubules and minimize leakage (Gilheany et al 1994).

Root end preparation

Use of ultrasonic surgical retro-tips is recommended as they are able to produce slimmer, more parallel and deeper preparations aligned with the long axis of the tooth (Wuchenich et al 1994). Use of a bur for retro-preparation is not recommended due to poor access to the root end and the risk of producing a preparation of insufficient depth with a lingual perforation.

Root end filling material

Biologically acceptable materials such as Intermediate Restorative Material and Mineral Trioxide Aggregate have been shown to be highly successful and are ideal options for the choice of root end filling materials (Chong et al 2003, Lindeboom et al 2005, Tsesis et al 2009). A post–operative periapical radiograph should be taken to check adequacy of the root end filling. Amalgam should not be used as long term success rates are poor (Frank et al 1992, Dorn & Gartner 1990), possibly due to the poor seal and subsequent corrosion and leakage over time.

Although gutta percha has been used successfully for obturating the canal, it is not recommended as a retrograde filling material and as far as possible, the existing gutta percha filling should not be left as the only canal seal. Root resection and burnishing of the existing gutta percha filling has been shown to have significantly lower success rates compared to placement of a root end filling (Christiansen et al 2009).

Examples of wrong usage

Exploratory surgery to look for root fractures or cracks on the roots should not be deemed as peri-radicular surgery, as the term "peri-radicular surgery" implies an interventional procedure to have been carried out on the root of the tooth. The level of difficulty with an exploratory surgery compared to an apicoectomy is vastly different and not justifiable for the charges for a table 2C or 3A procedure. If an attempt has been to prepare and fill the crack, with a material such as MTA or composite resin, then it may constitute as peri-radicular surgery. However, the success of such procedures is not well documented and cannot constitute as the treatment of choice.

Occasionally, single rooted anterior teeth, such as the mandibular incisor, may have more than 1 canal. However, this should not be considered as a multi-rooted tooth and the appropriate code should be SF708T.

References

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3b. ENDODONTICS: REIMPLANTATION/TRANSPLANTATION

Code	Table	Description	Guideline
SF814T	3A	Tooth, Dislocation, Reimplantation and Transplantation	This code refers to the following procedures: 1. Intentional replantation of an anterior or posterior tooth, which includes intentional removal, inspection and treatment of the root and replacement into its own socket. 2. Transplantation of an anterior or posterior tooth, which includes intentional removal, inspection and treatment of the root and placement into another tooth socket. Pre-operative and post-operative radiographs are necessary for standard of care.

General Principles
Intentional Replantation
Treatment should include an extraction technique to minimize damage to the periodontal ligament, limiting the extra-oral time of the tooth to less than 30 minutes and keeping the root moist during the extra-oral period (Kratchman 1997). Use of a tissue culture medium during the extra-oral period to maintain cellular viability of the root can be considered (Wolcott & Rossman 2003). Management of the root end is as outlined in the guidelines on peri-radicular surgery (see section on SF 708T and SF818T).

Transplantation
There is no established protocol for transplantation of teeth; however, the following guidelines should probably be adhered to:
- An extraction technique to minimize damage to the periodontal ligament
- Keeping the root moist during the extra-oral period to maintain cellular viability
- Close approximation of the transplanted tooth to the transplanted socket

In immature and developing teeth, root canal treatment is not necessary because the apex is open and revascularization of the pulp is expected. Endodontic treatment is indicated for teeth with closed apices, usually within a month after transplantation (Kahnberg 1987, Mejare et al 2004). The prognosis for both closed and open apices is considered favorable (Kahnberg 1987, Lundberg & Isaksson 1996).

Indications and contraindications
Intentional Replantation
In addition to the considerations for peri-radicular surgery (see section on SF708T and SF818T), intentional replantation may be considered in cases where anatomical

restrictions contra-indicate conventional apical surgery, such as in the maxillary and mandibular second molars, where access to root structures may be limited.

Transplantation

Transplantation of teeth, usually third molars, has been performed to replace a missing first or second molar. Other indications include orthodontic patients who undergo autotransplantation of maxillary premolars to replace congenitally missing mandibular premolars and mandibular premolars to replace maxillary incisors lost to trauma (Park et al 2010). Transplantation offers a viable and economic alternative to implants in selected cases for orthodontic and restorative reasons. A multi-disciplinary dental team is necessary as careful case selection and treatment planning is essential.

Contraindications to the above procedures include:
- Patient with significant medical conditions, e.g. uncontrolled diabetes, leukemia or cancer etc.
- Teeth that are non-restorable or with poor periodontal support
- Teeth with severely dilacerated and curved roots, which are prone to fracture after extraction.
- Poor surgical access, e.g. due to limited mouth opening

Examples of wrong usage

This code should not be used for the re-implantation of an avulsed tooth. In such cases, the code SF809M should be used instead.

References

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3c. DENTAL IMPLANT AND RELATED SURGERIES

Code	Table	Description	Guidelines for procedures
SB701M	1B	Mandible or Maxilla, Bony protuberance, Excision	Reductive pre-prosthetic surgery to facilitate removable denture fabrication and denture wear: knife-edge ridge, sharp bone spicules, severe undercut and small torus <5mm. This code should not be used for harvesting bone graft separately or in conjunction with implant placement.
SB702M	1C	Mandible or Maxilla, Dental Implant(s), Osseointegrated, Trephine Removal (x number of implants removed)	Removal of osseointegrated but failing or fractured implant(s) and removal of sleeper implant(s) by trephine or bur. This code should not be used for simple extraction of failed implant. Radiograph of implant with existing restoration(s) will provide proof and standard of care.
SB802M	3A	Mandible or Maxilla, Alveolar Defect/Deformity, Complex Alveoloplasty/Unilateral (lateral window) sinus lift/ ridge augmentation with bone graft from separate surgical site.	Applicable for sinus lift procedure and residual ridge augmentation, only when autogenous bone from a separate site and/or in combination with other forms of particulate graft is used. For simultaneous implant placement, no additional SB816M code shall be included. Removal of multiple and/or large tori >20mm length/diameter. This code should not be used for closed subantral sinus floor augmentation (internal sinus lift) and simple bone shaving procedures.
SB803M	2C	Mandible or Maxilla, Alveolar Defect/Deformity, Simple Alveoloplasty / Bone Regenerative Procedure	1. Guided Bone Regeneration – Residual ridge augmentation with auto and/or alloplastic bone graft. For simultaneous implant placement, no additional SB816M code shall be included. Removal of multiple and/or medium tori 5~20mm length/diameter. 2. Not applicable for Guided Bone Regeneration around failing implant(s). 3. Not applicable for post-extraction ridge preservation (socket preservation). 4. For Guided Tissue Regeneration around

Code	Table	Description	Guidelines for procedures
			natural teeth, please refer to SF709M and SF710M.
SB813M	2C	Mandible, Various Lesions, Alveolectomy (per quadrant)	Alveolectomy applies to reduction of multiple post-extraction sockets. Mylohyoid ridge reduction. Should not be used for surgical periodontal procedures. For simultaneous implant placement, no additional SB816M code shall be included.
SB814M	4A	Mandible or Maxilla, Various Lesions, Alveoloplasty with Epithelial Graft, OR Bilateral Sinus-lift procedure OR Ridge augmentation (multiple quadrants) with bone graft harvested from separate site	Augmentation procedures with autogenous soft and hard tissue for multiple sockets or residual ridges. For simultaneous implant placement, no additional SB816M code shall be included. This code should not be used for closed subantral sinus floor augmentation (internal sinus lift) and simple bone shaving procedures.
SB816M	2C	Mandible or Maxilla, Various Lesions, Insertion of Endosseous Dental Implant (single)(For multiple placement of implants, number of claims = number of implants placed)	Applicable to the actual number of implant(s) placed at the same surgical session not more than the number of missing teeth (not number of roots) to be replaced. Only implants of 3mm diameter or wider can be included. For simultaneous implant placement with bone grafts, the higher or same table applies and no separate claim for either should be included.

General Principles

This section of guidelines is intended to provide simple parameters for the purpose of assignment of Medisave tables for surgical dental implant procedures only and dentists should refer to textbooks and articles published by other specialist bodies and authoritative organizations for best clinical practice recommendations.

The dentist has a legal and ethical responsibility to use only implants which have favourable long term outcome assessment based on evidence, and those registered and licensed by the Singapore Health Science Authority under the Medical Devices Act.

Patient care should always come first with safe and effective provision of dental implants through the operators completing a structured course on dental implantology and updating themselves via continuing education.

General guideline for use of dental implant and related codes
i. Implant placement with or without simultaneous adjunctive site preparation
Each implant placed with essential primary stability is claimable under SB816M, regardless of single or two-staged surgery, from immediate socket to healed ridge in the maxilla and mandible for the sole purpose of restoration of function by replacement of the missing tooth unit. There should be no accompanied claims on related respective surgical extraction, internal sinus lift/closed subantral elevation or minor grafting procedures, which form part of the surgical site preparation in order to achieve lasting osseointegration.

ii. Staged adjunctive site preparation and implant placement
Highly atrophic site and pneumatic sinus that requires significant volume of augmentation with autogenous or a combination of autogenous and allografts need adequate healing period of 3 months or longer before any attempt to implant, hence justification to separate claims under staged surgeries. Therefore no simultaneous implant placement is advisable when SB802M or SB814M code is used.

In individual segment where there is a combination of grafted site to be left alone for a healing period and implant placements with primary stability, the former can be claimed as a single separate procedure and the latter, as per number inserted per tooth site.

Example of combination of codes
For example, case of missing #17, 16, 15, 14 where a common procedure of sinus augmentation SB802M can be claimed for 17, 16 (without simultaneous implant) plus 2 x SB816M can be claimed for 15 and 14. After a healing period of say, 6 months, 2 x SB816M for 17, 16 can be claimed separately.

References:
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3d. TRAUMA: DENTAL

Code	Table	Description	Guidelines for each code
SF809M	2C	Mouth, Dislocated Teeth/Dento-Alveolar Fracture, Reduction and Immobilisation	Prior to treatment, it is good clinical practice to document the extent of the injury via photos and relevant radiographs. Some methods of immobilization that may be carried out include orthodontic bracket arch wire, acid-etch resin arch wire, arch bar and interdental wiring.
SF815T	MSP	Tooth, Fracture/dislocation, Removal Of Arch Bar/Dental Cap Splint	Photographic documentation of the outcome is recommended.

General principles
Dislocated teeth and dentoalveolar fractures are associated with fractures of the socket wall and fractures of the alveolar process respectively. There is commonly lateral, avulsive or intrusive displacement of the teeth. Treatment of dislocated teeth and dentoalveolar fractures involve reduction and repositioning of the fractured segment and providing good stabilization to allow for osseous and periodontal healing.

Indications and contraindications
The indication is traumatic displacement of the teeth and alveolus requiring reduction and immobilization. Practitioners should note that prolonged splinting of teeth may lead to ankylosis.

Examples of wrong usage (where applicable/available)
The code SF809M should not be used for periodontal splinting of loose teeth with no history of traumatic injury.
The code SF815T should not be used for removal of splints for teeth with no history of traumatic injury.
This code should not be used for the intentional replantation of teeth. For that indication, please refer to SF814T (Tooth, dislocation, reimplantation and transplantation).

References
Peterson's Principles of Oral Maxillofacial Surgery, Chapter 21: Management of Alveolar & Dental Fractures by Richard Leathers and Reginald Gowans.

3e. TRAUMA: SOFT TISSUE

Code	Table	Description	Guidelines
SA801M	3A	Mucous Membrane, Deep Laceration/Multiple Lacerations, Repair	Deep and multiple lacerations, which involve the muscular layers and require layered suturing.
SA802M	1B	Mucous Membrane, Superficial Laceration equal/less than 7cm, Repair	Single layered suturing of a single shallow laceration of less than 7cm
SA803M	2B	Mucous Membrane, Superficial Laceration(s) more than 7 cm, Repair	Single layered suturing of shallow lacerations of more than 7cm

General principles

Repair of mucous membrane lacerations involves aiming to restore the tissues in their pre-traumatic state, minimizing bacterial wound flora, and removing any foreign bodies that may have been lodged in the tissues as a result of trauma and/or devitalized tissues that may cause post-operative infection. Closure of these lacerations will require suturing the mucosa to appose the segments, with deep lacerations usually involving a layered technique to minimize dead space and avoid significant tension at the edges. For all traumatic injuries which involve mucosal lacerations, it is good clinical practice to have photographic documentation.

Indications and contraindications

Intraoral mucous membrane lacerations brought about by trauma, in some cases, involving the deep muscular layers.

Examples of wrong usage (where applicable/available)

The code is to provide for wound apposition in the case of a traumatic injury. It should not be used for closure of a surgical incision, for example, when a flap raised for access to a bone graft donor site.

This code should not be used together with Mouth, Foreign Body (Superficial), Removal (SF811M 1B), when removing a foreign body lodged within the same laceration.

References

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3f. PATHOLOGY - CRYOTHERAPY/LASER APPLICATION

Code	Table	New TOSP Description	Guidelines for each code
SF823M	3B	Mouth, Various Lesions of Oral Mucosa (large/multiple), Cryosurgical/Laser Application with Biopsy	The cryoprobe or the Laser is used as an adjunct to removal of the specimen to be sent for histology. There should be a pathology report with a histologic diagnosis.
SF824M	2B	Mouth, Various / Pathologic Lesions of Oral Mucosa, Cryosurgical/Laser Application with Biopsy	
SM702M	2B	Mouth, Various/Pathologic Lesions of Oral Mucosa, Laser Application	The use of the Laser is meant to remove a small lesion where the diagnosis of the specimen is not in doubt and no histology is required, for example, shrinkage of haemangiomatous / lymphangiomatous lesions. As there is no histology, good clinical practice would entail photodocumentation of the lesion before and after application of the cryoprobe or Laser.

General principles

Cryosurgery involves deliberate destruction of the diseased tissue in a localized area using a closed delivery system of probes and nitrous oxide. The Laser, on the other hand, offers site-specific delivery of laser energy for excision of various lesions. Cryosurgery and laser application are less invasive options for management of oral lesions. The advantage of the use of Laser is the potential for reduced scarring and healing time.

Indications and contraindications

An indication for cryosurgery and Laser application is in the management of vascular lesions as they have a cauterizing effect on the tissue. It is also indicated in situations where the patient has special requirements, such as in the elderly or medically compromised, where a less invasive alternative is needed.

Through its cauterizing effect, there is a tendency for the application of the Laser or cryotherapy to distort the histologic appearance of the tissues and caution should be taken in lesions where there is a high suspicion of malignancy to ensure there is enough undamaged specimen for histology.

Examples of wrong usage

The example of wrong usage is in the application of diode lasers in periodontal pockets for elimination of bacteria. It is also not to be used in the similar application for the treatment of peri-implantitis.

The code is not meant for application of soft lesions/laser therapy for speeding up of healing after oral surgical procedures or as physiotherapy for the treatment of facial pain or temporomandibular joint disorders.

This code applies to the oral mucosa and cannot be used for Laser tooth preparation. If the Laser is used as an alternative to a scalpel, for example, in a gingivectomy procedure, the code that should be used is the descriptive term for the procedure, ie. SF707M and the above codes are not to be used.

References

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3g. PATHOLOGY

Code	Table	Description	Guidelines for each code
SF707T	1B	Tongue, Various Lesions (Benign Condition) Excision Biopsy <3cm	This is meant for lesions of the tongue only. Good clinical practice entails the specimen should be sent for histology. A histology report is required.
SA804M	2B	Mucous Membrane, Tumor/Cyst/Ulcer/ Scar, Excision	When used for scar excision, histology is not mandatory for the code SA804M but it should be documented with photographs. When used for Tumor/Cyst/Ulcer excision, a histology report is required
SA800S	1B	Skin and Mucous Membrane, Various Lesions, Excision Biopsy	Lesions excised under the code SA800S should be accompanied with a histology report. As the biopsy may yield 'surprises' it is good clinical practice to document this with photographs.

General principles
Small benign lesions that grow on the mucosa and skin that need removal due to discomfort or progressive enlargement. Basic principles governing the surgical management of these disparate lesions involve obtaining a good margin, good wound closure and obtaining a definitive histologic diagnosis where necessary.

Indications and contraindications
Indication for the removal is a discrete lesion amenable to excision. The clinician has to be mindful of the fact that the lesion may be part of a much larger pathology and a good representative section must be removed for histology.

Examples of wrong usage
SA804M should not be used in exposure of dental implants. The intent of the code is for the excision of pathology.
This code should also not be used in the case where there is harvesting of tissue from one area of the mouth to be transplanted to another, for example, connective tissue grafting and free gingival grafting. The provision is already made in the code SF700M.

Disambiguation
There is a slight difference in codes SA804M/2B and SA800S/1B.

SA804M/2B is not a "biopsy" procedure and therefore, it is not mandatory to send all specimens under this code for histology. The clinical situation is in the excision of a scar where there is no suspicion of malevolent pathology. Requiring all specimens

to be sent for a histopathological exam increases costs to the patient which may sometimes be unnecessary. However, when applied to excision of tumour/cyst/ulcer, the excised specimen should be sent for histology.

SA800S/1B has the descriptor of 'biopsy' attached to it and therefore must be accompanied by histology. The other criterion is that 'skin' should be part of the biopsy. Documentation of the lesion with a photograph is recommended for reference in the future.

3h. ORTHODONTICS: SURGICALLY-ASSISTED

Codes	Table	Description	Guidelines for each code
SF701T	1C	Tooth, Unerupted/Partially Erupted/Impacted, Surgical Exposure	Code SF701T is used for cases for a single tooth, where impaction is caused by soft tissue alone. With complete exposure of the crown and removal of overlying fibrous tissue that hinders eruption, usually the tooth moves into space quite rapidly
SF702T	2C	Tooth, Unerupted/Partially Erupted/Impacted, Surgical Exposure and Bonding for traction and assisted eruption	For code SF702T, an impacted single tooth requires an appliance to move it when there is retarded eruption. In cases like this, the embedded tooth would benefit from traction appliances for movement.
SF703T	2B	Teeth (2 or more) Unerupted/partially erupted/impacted, Surgical exposure	Code SF703T is used for multiple teeth, which require exposure but do not require an orthodontic appliance for assisted eruption.
SF704T	3C	Teeth (2 to 3), Unerupted/partially erupted/impacted, Surgical Exposure and Bonding for traction and assisted eruption	Codes SF704T and SF705T apply to two-to-three and four or more embedded teeth respectively. The numbers should correspond to the number of teeth having traction.
SF705T	4A	Teeth (4 or more) Unerupted/ partially erupted/ impacted, Surgical Exposure and Bonding for Traction and assisted eruption	

General principles

Surgical exposure of an embedded tooth involves removing bone and gingival tissue that may prevent proper eruption of the tooth into alignment, exposing the coronal surface of the tooth and maintaining a patent channel to facilitate unimpeded migration of the impacted tooth into its normal eruptive path. While occasionally, coronal exposure is enough to facilitate their eruption into position, traction forces may sometimes be necessary to supplement the tooth's eruptive forces to move the tooth in place with the aid of an orthodontic traction appliance.

This is commonly in the form of pins or bonded orthodontic brackets with ligature wires or chains.

Indications and contraindications

Surgical exposure is indicated for assisting impacted teeth, to move them coronally and buccally with or without the aid of orthodontic traction appliances. Surgical exposure is contraindicated for ankylosed teeth, teeth of abnormal morphology and if there is inadequate space to accommodate the tooth in place. It is good clinical practice for the clinician to provide a reasonable amount of time for an unerupted tooth to appear in the mouth prior to attempting surgical exposure. Surgical excision, as opposed to exposure and traction, is indicated for cases where good eruptive potential is not possible.

Examples of wrong usage

The code does not apply for orthodontic extrusion of a retained tooth root with short clinical crown for prosthodontic restoration. It also does not cover the extrusion of an unrestorable tooth root for the purpose of enhancing bone formation for subsequent dental implant placement.

References

Basch, N and Baylard, J. Orthodontic extrusion: periodontal considerations and applications. J Can Dent Assoc 2004, 70(11): pp 775-780.

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3i. PERIODONTAL SURGERY

Code	Table	Description	Guideline
SF703M	1A	Mouth, Periodontium (within 1 quadrant), Periodontitis, open flap debridement	Access flap/Open flap debridement with or without osseous surgery performed at sites within 1 quadrant, -probing depths must be greater than 4 mm - after non-surgical therapy - pre-surgical Xrays & periodontal charting of quadrant involved must be present - can be applied to natural teeth only
SF706M	1C	Mouth, Periodontium (within 2 quadrants), Periodontitis, Open flap debridement	Access flap/Open flap debridement performed with or without osseous surgery at sites within 2 quadrants - probing depths must be greater than 4 mm - after non-surgical therapy - pre-surgical Xrays & periodontal charting of quadrants involved must be present - can be applied to natural teeth only
SF704M	1B	Mouth, Periodontium (within 1 quadrant), Soft tissue defect/deformity, gingivoplasty	Crown lengthening within 1 quadrant - Flap must be raised - With or without osseous recontouring Removal of gingival overgrowth within 1 quadrant - Incision must be made *(blade/laser)* Mucogingival surgeries (1 quadrant) performed using non-autogenous

Code	Table	Description	Guideline
			materials, or in cases with coronally advanced flap alone
SF707M	2A	Mouth, Periodontium (within 2 quadrants), Soft tissue defect/deformity, gingivoplasty	Crown lengthening within 2 quadrants - Flap must be raised - With or without osseous recontouring Removal of gingival overgrowth within 2 quadrants - Incision must be made *(blade/laser)* Mucogingival surgeries (2 quadrants) performed using non-autogenous materials, or in cases with coronally advanced flap alone
SF705M	2B	Mouth, Periodontium (within 1 quadrant), Soft tissue defect/deformity, gingivoplasty with autogenous soft/hard tissue graft	Mucogingival surgery for root coverage/gingival augmentation within 1 quadrant using autogenous tissue (free gingival graft, connective tissue graft) - An additional donor site should be demonstrated.
SF708M	3A	Mouth, Periodontium (within 2 quadrants), Soft tissue defect/deformity, gingivoplasty with autogenous soft/hard tissue graft	Mucogingival surgery for root coverage/gingival augmentation within 2 quadrants using autogenous tissue (free gingival graft, connective tissue graft) - An extra donor site is needed.
SF709M	2C	Mouth, Periodontium, Bone defect/deformity, augmentation (autogenous) /regeneration	Guided bone regeneration/guided tissue regeneration around natural teeth - Autogenous bone from a donor site (additional surgical

Code	Table	Description	Guideline
			site, i.e., not from the same quadrant) - Membrane must be used
SF710M	2A	Mouth, Periodontium, bone defect/deformity, augmentation (non-autogenous) /regeneration	Guided bone regeneration/guided tissue regeneration around natural teeth - Non-autogenous bone used - Membrane must be used

Mouth, Periodontium, Periodontitis, open flap debridement (SF703M 1A, SF706M 1C)

General principles
Open flap debridement is part of surgical periodontal therapy. It involves surgical access to unresolved periodontally involved sites with probing depths greater than 4 mm, with the aim of root planing the root surfaces, possible osseous recontouring and pocket reduction.

Indications and contraindications
This surgery may be indicated at sites with probing depths of greater than 4 mm, with bone loss present. This surgery should not precede non-surgical periodontal therapy. The surgery is contraindicated at sites of less than 4 mm probing depths, and in presence of poor oral hygiene.

Examples of wrong usage (where applicable/available)
These codes cannot be used more than once for the same quadrant within the same year.
These codes cannot be used for non-surgical root planning, scaling and polishing.
These codes cannot be used for dental implants.

References
Lindhe J, Socransky SS, Nyman S, Haffajee A, Westfelt E (1982). "Critical probing depths" in periodontal therapy. J Clin Periodontol. 9:323-336.

Nyman S, Rosling B, Lindhe J (1975). Effect of professional tooth cleaning on healing after periodontal surgery. J Clin Periodontol. 2 :80-86.

Nyman S, Lindhe J, Rosling B (1977). Periodontal surgery in plaque-infected dentitions. J Clin Periodontol. 4:240-249.

Rosling B, Nyman S, Lindhe J (1976). The effect of systematic plaque control on bone regeneration in infrabony pockets. J Clin Periodontol. 3:38-53.

Mouth, Periodontium, Soft tissue defect/deformity, gingivoplasty (SF704M 1B, SF707M 2A)

General principles
This will include surgeries related to gingival excess. This can be applied to crown lengthening procedures (involving soft tissue alone or both soft & hard tissue) or in cases where there is drug-induced gingival hyperplasia/overgrowth. Mucogingival surgeries performed using non-autogenous materials, and in cases using coronally advanced flap alone are also included under this code.

Indications and contraindications
Crown lengthening is indicated in teeth with inadequate tooth structure for crown or bridge abutments, or where there are subgingival margins, or where there is excessive gingival tissue show post-orthodontic treatment.

Gingivoplasty/ gingivectomy can be indicated in cases with gingival hyperplasia related to drugs.

The indications for use in mucogingival surgery is similar to SF 705M, SF 708 M, i.e. in cases requiring recession coverage, for increasing zone of keratinized tissue, or to thicken tissue contour.

Examples of wrong usage
These codes cannot be used when no flap is raised.
These codes cannot be used around implants.

References
Brägger U, Lauchenauer D, Lang NP (1992). Surgical lengthening of the clinical crown. J Clin Periodontol. 19:58-63.

Lang NP, Kiel RA, Anderhalden K (1983). Clinical and microbiological effects of subgingival restorations with overhanging or clinically perfect margins. J Clin Periodontol. 10:563-578.

W.C. Tan, L.P. Lim, N.P. Lang (2007). Diagnosis, treatment and long-term maintenance of a patient with drug-associated gingival enlargement. PERIO 4: 277-286.

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Myron Nevins, Marc L. Nevins Soo-Woo Kim, Peter Schupbach, David M. Kim (2011). The Use of Mucograft Collagen Matrix to Augment the Zone of Keratinized Tissue Around Teeth: A Pilot Study. Int J Periodontics Restorative Dent;31:367–373.

Sanz M, Lorenzo R, Aranda JJ, Martin C, Orsini M (2009). Clinical evaluation of a new collagen matrix (Mucografts prototype) to enhance the width of keratinized tissue in patients with fixed prosthetic restorations: a randomized prospective clinical trial. J Clin Periodontol; 36: 868–876.

Mouth, Periodontium, Soft tissue defect/deformity, gingivoplasty with autogenous soft/hard tissue graft (SF705M 2B, SF708M 3A)

General principles
Mucogingival surgery using autogenous tissue like free gingival graft, or connective tissue graft from another surgical site (donor site). It can be used around natural teeth only.

Indications and contraindications
The procedure can be performed in cases requiring recession coverage, or for increasing zone of keratinized tissue, or to thicken soft tissue contour, or for pontic site soft tissue ridge augmentation for fixed partial denture work.

Examples of wrong usage (where applicable/available)
These codes cannot be used around implants.

References
Cortellini P, Tonetti M, Baldi C, Francetti L, Rasperini G, Rotundo R, Nieri M, Franceschi D, Labriola A, Prato GP (2009). Does placement of a connective tissue graft improve the outcomes of coronally advanced flap for coverage of single gingival recessions in upper anterior teeth? A multi-centre, randomized, double-blind, clinical trial. J Clin Periodontol. 36:68-79.

Cairo F, Pagliaro U, Nieri M (2008). Treatment of gingival recession with coronally advanced flap procedures: a systematic review. J Clin Periodontol. 35(8 Suppl):136-162.

Mouth, Periodontium, Bone defect/deformity, augmentation (autogenous) /regeneration (SF709M 2C)

General principles

This code is used in cases of open flap debridement with regeneration in periodontally involved teeth. It involves surgical access in sites with probing depths greater than 4 mm, with the aim of root planing the root surfaces, and guided tissue regeneration.

Indications and contraindications

This surgery may be indicated at sites with probing depths of greater than 4 mm, with intrabony defects or furcation involvements of molars (Class I or II), preferably in the mandibular molars. This surgery should not preceed non-surgical periodontal therapy. The surgery is contraindicated at sites of less than 4 mm probing depths, or furcation involvement Class III or in the presence of poor oral hygiene. Materials from autogenous source should be used, like autogenous bone from another surgical site or autogenous blood products like plasma rich protein. A membrane must be used with the bone graft.

Examples of wrong usage

This code cannot be used with dental implants.

References

Machtei EE, Schallhorn RG (1995). Successful regeneration of mandibular Class II furcation defects: an evidence-based treatment approach. Int J Periodontics Restorative Dent.15:146-167.

Jepsen S, Eberhard J, Herrera D, Needleman I (2002). A systematic review of guided tissue regeneration for periodontal furcation defects. What is the effect of guided tissue regeneration compared with surgical debridement in the treatment of furcation defects? J Clin Periodontol. 29 Suppl 3:103-116; discussion 160-162.

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Cortellini P, Labriola A, Tonetti MS (2007). Regenerative periodontal therapy in intrabony defects: state of the art. Minerva Stomatol. 56:519-539.

Mouth, Periodontium, bone defect/deformity, augmentation (non-autogenous) /regeneration (SF710M 2A)

General principles
Similar to SF709M, except the use of non-autogenous materials.

Indications and contraindications
This surgery may be indicated at sites with probing depths of greater than 4 mm, with intrabony defects or furcation involvement of molars (Class I or II), preferably in the mandibular molars. This surgery should not preceed non-surgical periodontal therapy. The surgery should be contraindicated at sites of less than 4 mm probing depths, or furcation involvement Class III in molars or in the presence of poor oral hygiene. Non-autogenous materials are used with a membrane.

Examples of wrong usage
This code cannot be used with dental implants.

References
As in (SF709M).

3j. TEETH EXCISION

Code	Table	Description	Guidelines
SF800T	3C	Teeth (2 to 3), Impacted, Excision with removal of bone and tooth division	Excision of 2-3 teeth where a flap was raised, bone removal **with** division of at least 1 tooth. Preoperative radiograph/s required for all teeth.
SF801T	3B	Teeth (2 to 3), Impacted, Excision with removal of bone (without tooth division)	Excision of 2-3 teeth where surgical flap/s was/were raised, bone removal of at least 1 teeth was performed, **without** division of teeth. Preoperative radiograph/s required for all teeth.
SF802T	4B	Teeth (4 or more), Impacted, Excision with removal of bone and tooth division	Excision of 4 or more teeth where surgical flap/s was/were raised, bone removal and division of at least 1 tooth is performed. Preoperative radiograph/s required for all teeth.
SF803T	4A	Teeth (4 or more), Impacted, Excision with removal of bone (without tooth division)	Excision of 4 or more teeth where surgical flap/s was/were raised, bone removal is performed for at least 1 tooth, **without** division of any teeth. Preoperative radiograph/s required for all teeth.
SF810T	3A	Tooth (deep, i.e. completely buried in bone), Excision with removal of bone and tooth division	Excision of 1 tooth where surgical flap was raised, bone removal is performed **with** division of tooth. Preoperative radiograph must demonstrate bone **completely** covering the impacted teeth. This code is used for deeply impacted tooth that has not erupted/retained and completely subcrestal.

SF811T	MSP	Tooth (Superficial), Unerupted/Partially Erupted/Impacted, Excision with Incision Of Overlying Soft Tissue And Removal Of Tooth	Excision of 1 tooth where a surgical flap was raised **without bone** removal and **without** division of tooth or root. Preoperative radiograph required. This code is used in surgical removal of **subgingival** retained roots or teeth that fractured during extraction leaving roots behind requiring surgical flap but **without** removal of bone and **without division of roots.**
SF812T	1B	Tooth (superficial), Unerupted/Partially Erupted/Impacted, Excision with removal of bone (without tooth division)	Excision for 1 impacted tooth where a surgical flap was raised **with bone removal** and **without** division of tooth or root. Preoperative radiograph/s must demonstrate bone partially covering the impacted tooth or root. This code is used in surgical removal of **subcrestal** retained roots or teeth that fracture during extraction leaving roots requiring surgical flap and **with burring of bone** but **without** division of roots.
SF813T	2C	Tooth (superficial), Unerupted/Partially Erupted/Impacted, Excision with removal of bone and tooth division	Excision for 1 impacted tooth where a surgical flap was raised **with bone removal** and **with** division of tooth or root. Preoperative X-ray required.
SF816T	2C	Tooth, Simple Unerupted/Partially erupted/Impacted/Fractured, Removal of Multiple Roots	Excision for single multirooted tooth, or 2 or more tooth/roots where a surgical flap was raised **with / without bone removal** and **with / without** division of at least 1 tooth or root. Preoperative radiograph required.

SF817T	4A	Tooth, Unerupted/Partially Erupted/Impacted, Excision with Release of Neurovascular Bundle	Excision of tooth/root(s) entrapping the inferior alveolar neurovascular bundle a surgical flap was raised **with bone removal** and **with** division of tooth or roots so as to necessitate piecemeal removal of the impacted tooth/roots to avoid unnecessary damage to the IAN bundle. Preoperative radiograph / imaging should demonstrate the IAN bundle to be in close proximity with the impacted tooth/roots.

General Principles:

Teeth excision is a dental surgical procedure involving raising a flap, with or without removal of bone, with or without sectioning of the tooth and/or root(s) where an impacted tooth/retained roots or supernumerary tooth is removed.

1)   An impacted tooth is one that fails to erupt into the dental arch within the expected time. The tooth becomes impacted because adjacent teeth, dense overlying bone, or excessive soft tissue prevents eruption. Because impacted teeth do not erupt, they are retained for the patient's lifetime unless surgically removed. The term unerupted includes both impacted teeth and teeth that are in the process of erupting. The most common impacted teeth are the maxillary and mandibular third molars, followed by the maxillary canines and mandibular premolars.

2)   Retained roots occurs when a tooth suffers from advanced dental caries resulting in a complete crown fracture during function leaving a decaying root stump subgingival or subcrestal. Often removal of these roots require raising a surgical flap to gain access to the root stump. In certain cases where the root of a tooth is either bulbous, curved or ankylosed or the surrounding bone is sclerotic or there is hypercementosis, the extraction of the tooth may result in a fractured root stump as well requiring raising a surgical flap and/or bone removal to gain a point of purchase on the root.

Indications of Teeth Excision:

Excision of tooth/teeth is done for various reasons including presence of caries, periodontal disease, pericoronitis, root resorption, orthodontic treatment, cystic changes and etc.

Examples of wrong usage

SF816T 2C vs SF812T 1B: A common error is to code SF816T 2C for excision of a tooth by raising a flap, bone burring and elevation of the tooth/root; SF816T is applicable for removal of multiple roots or a single root with sectioning (commensurate with the similar code SF813T 2C).

SF810T 3A (deep): Another common error is to assume an impacted tooth is deep (to the practitioner), without realizing that this code should be used where a tooth is incarcerated completely within bone; the applicable code is SF813T 2C.

These codes are not to be used for extractions that do not require any raising of flaps.

References
Contemporary Oral and Maxillofacial Surgery, 4th Edition Part II Principles of Exodontia. Larry J Peterson

3k. MISCELLANEOUS: MOUTH ABSCESS

Code	Table	Description	Guideline
SF801M	1A	Mouth, Abscess (superficial), Drainage	For code SF801M, there should be a demonstrable collection of pus. Preoperative radiograph to evaluate possible source of infection should be done where applicable. While there are studies that showed that immediate implant placement with guided bone regeneration may be done in infected sites that has been thoroughly debrided, the strength of the evidence is weak and such treatment should be done with caution.

General principles
An abscess is an accumulation of purulent material in tissues, organs or circumscribed spaces, usually associated with signs of infection. As such, drainage will require making an entry into the space to enable removal of the purulent material.

Indications
Periapical infections leading to intraoral abscess formation
Periodontal infections leading to intraoral abscess formation
Post-operative infections leading to intraoral abscess formation

Examples of wrong usage
This code should not be used if there is no demonstrable abscess formation. For example, curettage of the apical granuloma in the socket after an extraction should not be coded as SF801M.

References
Naves MM, Horbylon BZ, Gomes CF, Menezes HH, Bataglion C, Magalhães Dd. Immediate implants placed into infected sockets: a case report with 3-year follow-up. Braz Dent J. 2009;20(3):254-8.

Palmer R. Evidence for survival of implants placed into infected sites is limited. J Evid Based Dent Pract. 2012 Sep;12(3 Suppl):187-8.

Waasdorp JA, Evian CI, Mandracchia M. Immediate placement of implants into infected sites: a systematic review of the literature. J Periodontol. 2010 Jun;81(6):801-8. doi: 10.1902/jop.2010.090706.

3l. MISCELLANEOUS: FRENAL ATTACHMENT

Code	Table	Description	Guideline
SF701M	1B	Mouth, Frenal Attachment, Release	Release of frenal attachments should include excision of the attachments and reattachment at or above the mucogingival junction. Surgery may be done with scalpel or laser.

General Principles
Frenal attachments are muco-muscular attachments of the lips to the alveolus. This is more commonly found in the maxillary midline as well as laterally in the region of the premolars. It may also be found in the mandibular labial sulcus. Lingual frenum is coded separately in the TOSP under "Tongue-tie" and is not covered here.

Indications and Contraindications
Frenal attachments may create spaces between teeth, typically causing a median diastema. Such frenal attachments are indicated for release to facilitate closure of the diastema. Frenal atachments may also affect prosthodontics treatment and release is indicated to facilitate such treatment.

Examples of wrong usage
Regardless of whether laser or scalpel is used to release the frenal attachment, this code SF701M (1B) is to be used. Codes SF823M (3B), SF824M (2B) and SM702M (2B) are not to be used even if laser is used.

References
Pié-Sánchez J, España-Tost AJ, Arnabat-Domínguez J, Gay-Escoda C. Comparative study of upper lip frenectomy with the CO2 laser versus the Er, Cr:YSGG laser. Med Oral Patol Oral Cir Bucal. 2012 Mar 1;17(2):e228-32.

Mittal M, Murray AM, Sandler PJ. Maxillary labial fraenectomy: indications and technique. Dent Update. 2011 Apr;38(3):159-62.

3m. MISCELLANEOUS: FOREIGN BODY

Code	Table	Description	Guideline
SF811M	1B	Mouth, Foreign Body (Superficial), Removal	Pre-operative documentation of the presentation of the foreign body with either radiographs and/or photographs will facilitate access to and complete removal. As with all codes in the TOSP, this codes requires that an incision be made to gain access to the foreign body for removal and subsequently, closure of the wound. Post operative radiograph to assess completeness of removal of the foreign body where applicable is good clinical practice.

General Principles

A foreign body may be lodged in the mouth during mastication, home oral healthcare procedures, accidental injuries, intentionally by the patient (eg "charm pins"), or iatrogenically.

Indications and Contraindications

A foreign body is indicated for removal if it causes signs and symptoms such as pain and swelling. Removal is also indicated in the absence of signs and symptoms if the patient electively opts for removal.

Examples of wrong usage

This code should not be use if the foreign body is easily accessed and no incision is required. A foreign body that can be removed without an incision is similar to a simple forceps extraction of an erupted tooth.

This code should not be used in combination with codes for repair of mucous membrane lacerations (SA801M, SA802M and SA803M) when the foreign body is lodged within the same laceration.

References:

Nil

3n. MISCELLANEOUS: TONGUE TIE

Code	Table	Description	Guideline
SF804T	1A	Tongue, Tongue Tie, Release	For cases whereby the tongue tie is caused by a thin mucosal strand, release of tongue tie (SF804T), or frenuloplasty, may be done by means of a pair of blunt-end scissors or scalpel or laser.
SF805T	1B	Tongue, Tongue Tie, Revision	For cases whereby the tongue tie is caused by a wide band of mucosa or complete fusion of the tongue to the floor of mouth, revision of tongue tie (SF805T), or frenectomy, by excision of the lingual frenulum and closure with a Z-plasty is needed to ensure adequate mobilization of the tongue. Surgery may be done using scalpel or laser.

General principles

Tongue-tie is due to an abnormally short lingual frenulum which may restrict mobility of the tongue. This is a congenital anomaly and it may affect the feeding of infants. Adults also present with this condition. The degree of attachment varies from a thin mucosa strand to complete fusion to the floor of mouth. Surgical correction of tongue tie may be undertaken for the infant as well as adult. Adult patients seeking this procedure for improvement of speech should be counseled preoperatively on the benefits of speech therapy vis-à-vis surgery.

Indications

Surgical correction of tongue tie may be indicated in neonates when it interferes with feeding. Surgery is also indicated for older patients when it interferes with eating, speech or prosthodontics treatment.

Examples of wrong use of code

Use of SF805M instead of SF804M for mild cases of tongue tie caused by a thin mucosal strand. Regardless of whether laser or scalpel is used to release the tongue tie, this code SF804T and SF805T are to be used. Codes SF823M (3B), SF824M (2B) and SM702M (2B) are not to be used even if laser is used.

References:

Division of ankyloglossia (tongue tie) for breastfeeding - guidance
NICE International procedure guidance 149. 14 December 2005

Glynn RW, Colreavy M, Rowley H, Gendy S. Division of tongue tie: review of practice through a tertiary paediatric otorhinolaryngology service. Int J Pediatr Otorhinolaryngol. 2012 Oct;76(10):1434-6. doi: 10.1016/j.ijporl.2012.06.017. Epub 2012 Jul 17.

Suter VG, Bornstein MM. Ankyloglossia: facts and myths in diagnosis and treatment. J Periodontol. 2009 Aug;80(8):1204-19. doi: 10.1902/jop.2009.090086.

3o. MISCELLANEOUS: NEURALGIA

Code	Table	Description	Guideline
SK733N	1A	Nerve, peripheral nerve block, anesthetic	Application of anesthetics (SK733N, SK734N, SK735N) as a treatment for neuralgia may be used for diagnostic or short term therapeutic purposes. Neurolytic, cryotherapy and radiofrequency thermocoagulation are use for long term/ permanent therapeutic purpose in the management of neuralgia. No single modality of treatment is effective for all patients. Detail history taking and documentation are crucial. Adjunctive therapy such as pharmacotherapy, psychotherapy and physiotherapy should be considered
SK734N	1A	Nerve, peripheral nerve block, anesthetic up to 2	
SK735N	1C	Nerve, peripheral nerve block, anesthetic more than 2	
SK736N	1B	Nerve, peripheral nerve block, neurolytic	
SK739N	1C	Nerve, peripheral nerve block, neurolytic, cryo, radiofrequency up to 2	
SK740N	2B	Nerve, peripheral nerve block, neurolytic, cryo, radiofrequency, more than 2	

General Principles
The wording of these codes is not complete as the diagnosis is missing from the code. The intended diagnosis of these codes is "neuralgia". As such, all the above codes should be read in the context of treatment of neuralgia.

Indications and contraindications
The indication for the above codes is neuralgia.

Examples of wrong use of codes.
These codes cannot be used when an inferior alveolar nerve block is done for the purpose of dental treatment e.g. extraction, endodontics, diagnostic blocks

References:
Zakrzewska JM, Akram H. Neurosurgical interventions for the treatment of classical trigeminal neuralgia. Cochrane Database Syst Rev. 2011 Sep 7;(9):CD007312. doi: 10.1002/14651858.CD007312.pub2.

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Peters G, Nurmikko TJ. Peripheral and gasserian ganglion-level procedures for the treatment of trigeminal neuralgia. Clin J Pain. 2002 Jan-Feb;18(1):28-34.

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