



Guidance document for processing PM-JAY packages

Cerebral and Spinal Arteriovenous Malformations

Procedures covered: 2

Specialty: Interventional Neuroradiology

Package name	Procedure name	HBP 1.0 code	HBP 2.0 code	Package price (INR)
Cerebral & Spinal AVM embolization - Using Histoacryl (per sitting)	Cerebral AVM embolization - Using Histoacryl (per sitting)	S900007	IN002A	1,00,000
Cerebral & Spinal AVM embolization - Using Histoacryl (per sitting)	Spinal AVM embolization - Using Histoacryl (per sitting)	S900007	IN002B	1,00,000

ALOS: 5 days

Minimum qualification of the treating doctor:

Essential: DM/Equivalent (in Interventional Neuroradiology), MCh/DNB/Equivalent in (Neurosurgery, if required Vascular Surgeon)

Special empanelment criteria/linkage to empanelment module: Care at Tertiary Hospital.

Disclaimer:

For monitoring and administering the claim management process of **Cerebral & Spinal AVM embolization**, NHA shall be following these guidelines. This document has been prepared for guidance of PROCESSING TEAM and TRANSACTION MANAGEMENT SYSTEM of AB PM-JAY for the claims of procedures mentioned above. The hospitals can also refer to this document so that they have the insight on how the claims will be processed. However, this document doesn't provide any guidance on clinical and therapeutic management of patient. In that respect the hospitals and physicians may refer to any other relevant material as per the extant professional norms.

PART I: GUIDELINES FOR CLINICIANS AND HEALTHCARE PROVIDERS

1.1 Objective:

The purpose of this section is to act as a guidance & a clinical decision support tool for the clinicians in deciding the line of treatment, plan clinical management of patient and decide referral of cases to the appropriate level of care (as required) for treatment of patients under PMJAY and selection of corresponding Health Benefit Package.

It will also serve as a tool for hospitals to determine and submit the mandatory documents required for claiming reimbursement of health benefit package under PMJAY.

1.2 Clinical key pointers:

CEREBRAL (BRAIN) AVM

Cerebral arteriovenous malformations (cAVMs) are rare congenital anomalies of cerebral blood vessels that result from maldevelopment of the capillary bed, permitting direct communication between cerebral arteries and veins.

They are associated with a few syndromes, such as hereditary hemorrhagic telangiectasia, Wyburn-Mason syndrome, von Hippel-Lindau disease, and Sturge-Weber syndrome.

Clinical Presentation

- Intracerebral hemorrhage (most common)
- Seizure
- Headache
- Focal neurologic deficit
- Incidental finding

The Spetzler-Martin Scale is used to estimate the risk of surgical resection of an AVM with higher grades being associated with greater surgical morbidity and mortality (Table 1)

Table 1

Spetzler-Martin Grading Scale for AVMs.

Characteristic	Number of points assigned
Size of AVM	
Small (<3 cm)	1 point
Medium (3–6 cm)	2 points
Large (>6 cm)	3 points
Location	
Noneloquent site	0 points
Eloquent site*	1 point
Pattern of venous drainage	
Superficial only	0 points
Deep component	1 point

*Sensorimotor, language, visual cortex, hypothalamus, thalamus, internal capsule, brain stem, cerebellar peduncles, or cerebellar nuclei.

Treatment options

- Management of cerebral AVMs includes observation with medical management, microsurgical resection, stereotactic radiotherapy (SRS), and endovascular embolization.

- Invasive treatment modalities are the reasonable choice for ruptured cerebral AVMs due to the high rate of morbidity and mortality, and the goal of treatment is eradication of the AVM.
- The factors that dictate treatment options (which may include single or multimodal therapy) are operator skill, AVM size and location, surgical or endovascular accessibility, venous drainage, and presence of high-risk features, such as a feeding artery aneurysm.
- Complete resection or obliteration of the nidus and AV shunt is considered as the treatment of choice of cAVMs. This may be performed primarily or after endovascular embolization to reduce bleeding risks during surgery and to facilitate complete and uncomplicated removal.
- The second is SRS. This also may be done primarily or after embolization to reduce nidal volumes and potentially to improve nidal obliteration rates.
- The final method is endovascular embolization itself.

Endovascular embolization

Endovascular treatment of brain AVMs involves the delivery of liquid embolics, such as n-butyl cyanoacrylate and ethylene vinyl alcohol copolymer (Onyx) and platinum embolic coils via super selective catheterization with flow-guided ultrathin microcatheters.

Embolization may be considered in the following scenarios:

- Preoperative embolization
- Curative embolization
- Before radiosurgery
- Targeted embolization
- Palliative embolization

Complications

- Stroke
- Intracranial Hemorrhage

SPINAL AVM

- Spinal arteriovenous malformations (AVMs) are rare pathologies representing 3%–4% of all space-occupying lesions affecting the spinal cord.

- They are abnormal collections of blood vessels in the spinal canal that have a direct connection between the arterial system and the venous system without intervening capillaries
- Spinal dural AVMs are the most common type in adults
- Intradural AVMs are located outside the substance of the spinal cord
- Intramedullary AVMs are located within the substance of the spinal cord

Classification

- Type I, dural arteriovenous fistula (AVF)
- Type II, glomus intramedullary AVM
- Type III, juvenile malformations
- Type IV, perimedullary AVF

Symptoms

- Eighty-five percent of spinal AVMs involve progressive neurological symptoms over months to years, especially back pain associated with progressive sensory loss and lower extremity weakness.
- Ten percent to 20 percent involve a sudden onset of weakness, numbness, difficulty urinating, urinary incontinence, fecal incontinence, or paralysis (usually in patients younger than 30) as a result of hemorrhage.

Treatment

- The treatment plan is formulated after careful consideration of the patient's clinical history, the symptoms, the physical examination and available diagnostic studies.
- Some lesions can be treated via minimally invasive endovascular embolization of the AVM to obliterate it.
- Lesions that have hemorrhage usually require surgical removal, especially those within the spinal cord or compressing the spinal cord.
- Therapeutic options for SCAVMs comprise endovascular embolization and surgical treatment, depending on the hemodynamics of the lesion, its site and angioarchitecture, and a multidisciplinary approach is essential in order to plan the best management

1.3 Mandatory documents- For healthcare providers

Following documents should be uploaded by the concerned hospital staff at the time of pre-authorization and claims submission:

Mandatory document	Cerebral AVM embolization	Spinal AVM embolization
i. At the time of Pre-authorization		

Clinical notes including neurological evaluation findings and planned line of treatment	Yes	Yes
CT/MRI Brain/Spine	Yes	Yes
Digital Subtraction Angiography (DSA)	Yes	Yes
Complete Blood Count, Creatinine, Prothrombin time (PT)/ INR	Yes	Yes
ii. At the time of claim submission		
Detailed Indoor case papers (ICPs)	Yes	Yes
Detailed Procedure / operative notes	Yes	Yes
Intra-operative photographs (optional)	Yes	Yes
Post procedure Check Angiogram	Yes	Yes
Embolization material details	Yes	Yes
Detailed discharge summary	Yes	Yes

PART II: GUIDELINES FOR PROCESSING TEAM

PART III: GUIDELINES FOR IT

3.1 Objective: To enable setting up of cross check mechanisms / rule engines within the IT platform (TMS) to ensure compliance with STGs and to prevent fraud / abuse of the Health Benefit Package.

3.2 Below mentioned are the scenarios where a provision would be built in TMS for pop-ups:

- a. Was clinical presentation, severity and imaging indicative of surgery? Yes
- b. Is the patient having evidence of: No
 - a. Unfavourable anatomy
 - b. Renal insufficiency
 - c. Contrast allergy
 - d. Non-correctable coagulopathy

Till the time the functionality is being developed, the processing doctors shall check the above manually.

References

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 4. <https://www.uclahealth.org/neurosurgery/spinal-arteriovenous-malformation-avm>
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