

PRINCIPLES OF BANDAGING AND TECHNIQUES – AN AYURVEDIC AND MODERN REVIEW

Dr. Dhawale Jyoti Dhanraj*¹ and Dr. Kedar Nita²

¹PG Scholar, Shalyatantra Department, Government Ayurved College, Nagpur.

²Associate Professor, Shalyatantra Department, Government Ayurved College, Nagpur.

Article Received on
23 July 2022,

Revised on 13 August 2022,
Accepted on 02 Sept. 2022

DOI: 10.20959/wjpr202212-25483

*Corresponding Author

Dr. Dhawale Jyoti Dhanraj

PG Scholar, Shalyatantra
Department, Government
Ayurved College, Nagpur.

ABSTRACT

Dressing and bandage are frequently used interchangeably. An integral part of routine wound care is dressing. The main functions of wound dressings are to: a) offer a temporary physical barrier of protection, b) apply pressure to control bleeding, c) support a medical device, such as a splint, or to support the body on its own, d) absorb wound drainage, and e) offer the moisture required to maximise re-epithelialization. Additionally, it can be utilised to confine a certain body portion. In Ayurveda, bandaging is referred to as bandhan. In the Sushrut Samhita, Ashtang Hridayam, and Ashtanga Sangraha, Acharya Sushruta and Vagbhata discuss bandha. The Bandhan is crucial for more

straightforward, efficient wound care. The anatomical and pathologic aspects of the wound determine the best type of dressing. Modern wound dressings offer other advantages like antibacterial capabilities and pain relief. In this review article, we have attempted to describe several bandhan kinds, their sthanas (locations), their vidhis (procedures), their management, and how Sushruta Samhita and Vagbhata in Ayurveda are useful in the modern era.

KEYWORDS: Bandh, Bandhanvidhi, Shushrutsmhita, Bandaging.

INTRODUCTION

Dressings are applied to wounds and ulcers to cover them, offer support, and promote healing.^[1] When a wound is bandaged, the Shodhan process, in which the wound remains clean, soft, and free from difficulties, is carried out, and the wound begins to heal properly. Advanced wound dressings have a reputation for reducing recovery periods and medical expenses. Bandha Vidhi is the Ayurvedic term for bandaging the wound (affected region). Bandha- (Bandage) Shodhan and ropan of wound are applied to promote stability in bones

and compactness in joints.^[2]

Advantages: It provides comfort to the patient and covers the wound to stop additional contamination.^[3] Disadvantages: It can get wet, which might prevent the establishment of the epithelial layer.^[4]

BANDHANA DRAVYAS (MATERIAL FOR BANDAGING): Materials for bandaging should be chosen based on the disease's stage, the time of day, and the season.^[5] Nowadays, linen, flannel, muslin, or cotton are used for bandaging.^[6]

DRAVYA	MATERIAL FOR BANDAGING
karpas	Cotton
Kshaum	flax
Aaivak	Sheep wool
kausheya	silk
Dukul	fabric (cloth)
Chinpatta	Chinese silk (fabric)
Charmanta	Leather of animals like deer, etc
Antrva-lkla	Inner bark of trees like bhurjapatra, etc.
Alaabusakla	skin of bottle gourd
Lata	creepers
Vadla	Split bamboo
Rjjau	Ropes
Tulfal	Cotton fiber of simbaal friut
Santainaka	Pad of cotton fibers
Loha	Metals of like gold etc

The three major types of bandages are: roller bandages, tubular bandages and triangular bandages.

1) Roller bandages are long strips of material. Basically, there are two types of roller bandages:

- An elastic roller bandage is used to apply support to a strain or sprain and is wrapped around the joint or limb many times. It should be applied firmly, but not tightly enough to reduce circulation.
- Cotton or linen roller bandages are used to cover gauze dressings. They come in many different widths and are held in place with tape, clips or pins.

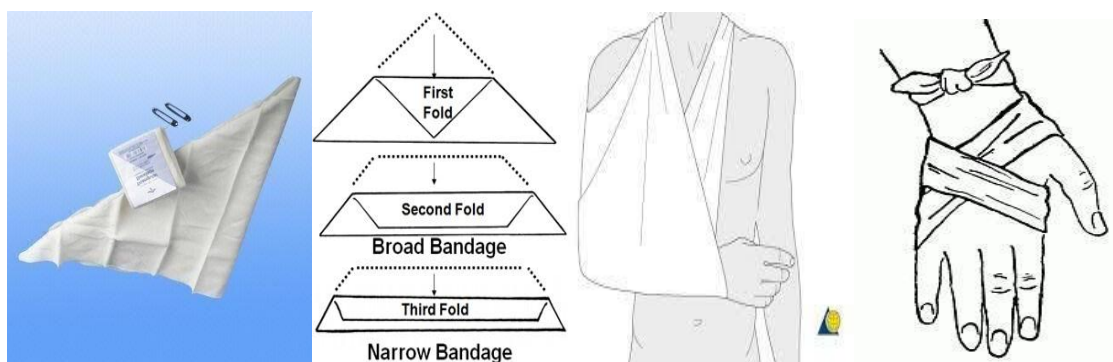
They can also be used for wound compression, if necessary, as they are typically sterile.



2) Tubular bandages are used on fingers and toes because those areas are difficult to bandage with gauze. They can also be used to keep dressings in place on parts of the body with lots of movement, such as the elbow or knee.



- 3) Triangular bandages are made of cotton or disposable paper. They have a variety of uses
- When opened up, they make slings to support, elevate or immobilize upper limbs. This may be necessary with a broken bone or a strain, or to protect a limb after an operation.
 - Folded narrowly, a triangular bandage becomes a cold compress that can help reduce swelling.
 - They are used also for applying pressure to a wound to control bleeding.



TYPES & SITES OF BANDAGES: (*Aakaranusar Bandha prakar* according to *Ayurved & Modern*)

Acharya sushruta has described 14 types of *Bandh* and *vaghabhata* described 1 extra *bandha* i.e *Utsangibandha* hence, there are total 15 types of *bandha* in *Ayurveda*.^[7]

Sr. no	<i>Bandha</i> (Bandages)	<i>Bandha</i> (Bandages)
1	Sheath (<i>Kosha</i>)	Around thumb and fingers
2	Long roll (<i>Dama</i>)	Sling around straight parts
3	Cross – like (<i>Svastika</i>)	Spica around joints
4	Spiral (<i>Anuvellita</i>)	Around upper and lower limbs
5	Winding (<i>Mutoli</i>)	Circular around neck, penis
6	Ring (<i>Mandala</i>)	Circular around stumps
7	Betal box type (<i>Sthagika</i>)	Amputation stumps, tip of penis or fingers
8	Two tailed(<i>Yamaka</i>)	Around limbs to treat ulcers
9	Four-tailed (<i>Khatva</i>)	For jaw, cheeks, temples
10	Ribbon-like (<i>China</i>)	Outer angles of eyes; temples
11	Loosely knotted (<i>Vibandha</i>)	Over back abdomen & chest
12	Canopy like (<i>Vitana</i>)	Protective cover over head wound
13	Cowhorn (<i>Gophana</i>)	Over chin, nose, lips, anorectal region
14	Five tailed(<i>Panchangi</i>)	Head and neck above the level of clavicles
15	Triangular (<i>Utsangi</i>)	Over Fractures

On the basis of the site of wound the bandaging method is of three types.^[8,9]

Sr.No	<i>Bandh</i> (Bandages)	<i>Sthan</i> (Sites)
1	<i>Gaadh bandh</i> (Tight bandage)	Buttocks, abdomen, axillary region, inguinal region, thighs & head.
2	Sama bandh (in between loose & tight bandage)	Extremities, mouth, ears, throat, penis, scrotum, back, flanks, abdomen and chest.
3	Shithila bandh (loose bandage)	Eyes & Joints.

BASIC BANDAGING FORMS: Each bandaging technique consists of various basic forms of bandaging. The following five basic forms of bandaging can be used to apply most types of bandages:

1. Circular bandaging
2. Spiral bandaging
3. Figure-of-eight bandaging
4. Recurrent bandaging
5. Reverse spiral bandage

BANDHAN VIDHI (procedure of bandaging with modern correlation)

- 1) ***Kosha bandha*** (sheath of sleeve bandage, Finger Bandage)- *kosha* is Hebrew for purse or pocket. The word "*kosha*" makes it obvious that the bandage's design allows for the retention of any peripheral part, including the distal ends of fingers. It is made of leather and has the same design as the sword's cover. It is tied with thread and maintained or worn on the fingers. This form of bandage, which is utilised or put over injuries to the palms, is now known as a finger bandage in modern times.^[10,11]



• कोशमङ्गुष्ठाङ्गुलिपर्वसु विदध्यात्॥ Su.Su.18/18

2) *Dama bandh* (four tailed bandage, Sling Bandage)

This kind of bandage is applied to bodily parts where it is impossible to bandage. A large cloth is placed in the middle of this bandage, and long bandages are positioned on all four corners of the cloth. The wide cloth is left on the wound, and the four long bandages are twisted over the affected area of the body before being linked to the bandage in front of them or to the long bandages on the other side. Typically used to treat varicose veins and reduce pain in the calf. This bandha is now referred to as Tailed Bandage.^[10]

• दाम सम्बाधेऽङ्गे॥ Su.Su.18/18

3) *Swastika bandh* (Cross or Figure of eight bandages, Spica bandage)

The bandage's design resembles a Swastika or an English numeral.^[8] This bandage is now referred to as a figure-eight bandage. It entails two twists, with the bandage strips crossing at the side of the joint that bends or stretches. It is typically employed to restrain a flexing joint or part of the body underneath and above the joint. Additionally, it is applied to the kurchakas marmas (navicular ligaments), the brows, the ears, and the breast area.^[10,11]

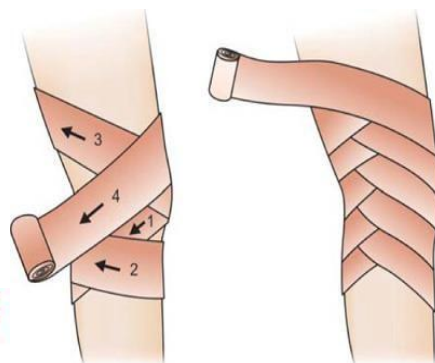
The figure-of-eight bandage can be applied using a roller bandage in two ways:

- Following a circular turn around the middle of the joint, the bandage should fan out upwards and downwards.

The turns should cross at the side where the limb flexes

- The figure-of-eight turns can also be applied from a starting point located below or above the joint crease, working towards the joint itself. The cross-over points will be located at either the flexing or extending side of the joint; the side where the turns do not cross remains uncovered.

• सन्धिकूर्चकभूस्तनान्तरतलकणेषु
स्वस्तिकं॥ Su.Su.18/18



4) *Anuvellita bandh* (Spiral bandage)

The bandage is designed to encircle the branches on all four sides like a creeper. Circular bodily parts are frequently bandaged with spiral bandages. It is knotted around the outermost body parts in accordance with their diameter in such a way that, with each spiral round, roughly one-third of the bandage's breadth is covered.

Beginning with the area with the least amount of breadth, the bandaging should be applied before progressively working its way up to the area with the most. Modern terminology refers to this style of bandage, which is typically used on limbs, as a spiral bandage. The elasticity of the material will allow the bandage to conform snugly to the skin despite the body part's expanding diameter.^[6,10]

• अनुवेल्लितं शाखासु॥ Su.Su.18/18



Reverse spiral bandages are spiral bandages that, after each turn, are folded back on themselves by 180 degrees. This V-shaped fold enables the bandage to conform over its whole length to the tapered shape of the body portion. It is necessary to use this kind of bandaging when utilising non-elastic bandages. The reverse spiral technique is currently much less popular due to the invention of stretchy fastening bandages.



5) *Mutoli bandh* (Winding bandage)

It is a bandage with a net-like loose weave that is tied loosely in accordance. When applying this bandage, the netting portion is placed over the injured area, and the two long bandages that are joined to it are tied together. The bandage is not pressured when the part receives support in this manner. The patient can readily urinate or faeces while wearing this bandage.



• ग्रीवामेढ्रयोः मु(प्र)तोलीं,
Su.Su.18/18

6) *Mandal bandh* (Circular bandage, Abdominal binders)

This bandage has a round form. This bandage is fastened across the buttocks, abdomen, back, and axilla.^[6,10] For circular bandages, we utilised cloth strips, gauze roller bandages, or triangular bandages folded in half (cravat). The bandages are put in layers over one another using the circular bandaging technique:

- Holding the loose end until it is fastened by the first circle of the bandage, unroll the bandage with the roll on the inner side, either toward you or laterally.
- It can take two or three turns to adequately cover a region. Using tape or a clip, secure the bandage in position. A few circular bandaging turns serve as the beginning and conclusion of almost all bandaging processes. Modern science states that circular bandaging is used to begin other bandaging techniques or to hold dressings on body areas such the arms, legs, chest, or belly.



• वृत्तेऽङ्गे मण्डलम्, Su.Su.18/18

7) *Sthagika bandha* (Stump bandage)

The shape of this bandage is like Sthagikakar i.e., half portion is having more width or broad surface and other portion is having narrower surface (lesser width). It is used on the terminal parts of fingers, toes and penis. It is also an alternative of kosha bandh i.e Finger bandage.



अङ्गुष्ठाङ्गुलिमेढ्राग्रेषु स्थगिकां,
Su.Su.18/18



- 8) **Yamaka bandha** (Twin bandage) - When two wound are situated at a small distance from each other than one wound is bandaged and without tying the knot other wound is also bandaged and then knot is tied. In this way, by one bandage, two wounds are bandaged which are situated nearby.

• यमलव्रणयोर्मकं, Su.Su.18/18



- 9) **Khatva bandha** (four tailed bandaged)

It's "Chatuspad", as it has a wide cloth in middle with four long strips of bandage one present in each corner. It is same like dama bandha but used in smaller regions (parts of body). It is used around cheeks, cheek-bones, and the parts between the ears and the eye-brows

• हनुशङ्खगण्डेषु खट्वाम्,
Su.Su.18/18

- 10) **China bandh** (many tailed bandage for eye)

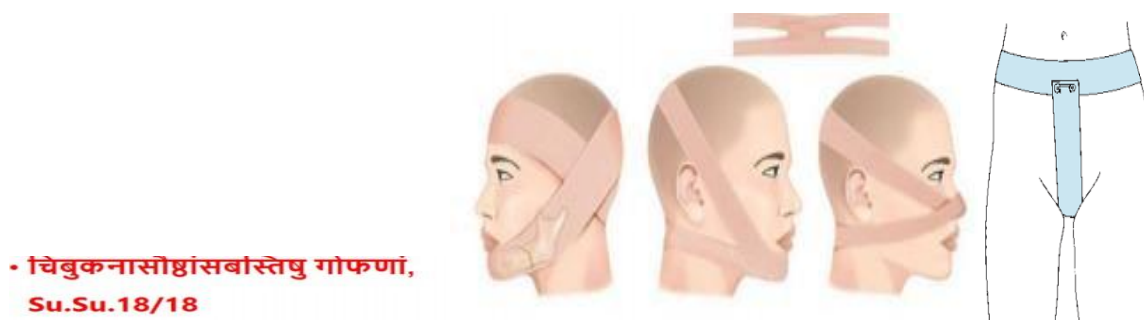
This bandage is made from the soft cloth imported from china. The shape of this bandage is same like that of Vitana bandh as this use only on eyes. Hence a round piece of cloth having the width as much as it can covers eyes is taken & long bandages are attached to it, these bandages are tied behind the head. Acc. to modern this is eye bandage & it's applied after eye surgery like cataract etc.^[10,12]



• अपाङ्गयोश्चीनं, , Su.Su.18/18

11) *Gophana bandha* (T bandage)

Middle piece of the cloth has certain depth so that body part can be kept in it. This bandage is used in chin, nose, lips, shoulder and pubic region bandaging. It is also used for bandaging of scrotum region. The center part or piece of cloth is taken smaller or bigger in size according to site. Now this bandh is known as 'T' bandage. It is mainly consist of 1 horizontal limb & 2 vertical limbs & applied over perianal & perineal region same as shushruta.

**12) *Vitana bandha* (cephalic bandage, Head Bandage)**

This *bandha* is tied on head and the cloth to be used should be having the width that can cover the head from all sides. Due to covering the head from all sides it is called *vitana bandh* as it looks like cape. When the cloth is having four sides then the two ends should be tied on forehead and other two ends should be tied behind the head. When there is triangular bandage, the broad part is kept on the forehead and the two opposite ends are taken. Behind the head passing through temporal region the third end is placed below the knot then the third point is taken over the knot and tied with safety pin. Now this bandh is known as Head bandage procedure is same as sushruta. It is used in after suture wound of the scalp, after neurological operation.

• मूर्धनि वितानं, Su.Su.18/18

**13) *Vibandha bandha* (many tailed bandage)**

In this type, the center piece of cloth is four sided and at two end of this there in presence of 6 to 8 long strips of bandages. From these 5 strips are present upper, lower & horizontal direction & then the two strips present on other two corners are tied behind the neck.



• पृष्ठोदरोरःसु विबन्धं, Su.Su.18/18

14) *Panchangi bandha* (Bandage with five extremities)

This bandage is applied above the clavicle. In this the long bandage strips present on all four sides with one extra bandage strip present on one corner. Hence due to presence of five strip bandages it is called as *Panchangi bandh*.^[8,10]



• जत्रुण ऊर्ध्वं पञ्चाङ्गीमिति;
Su.Su.18/18

15) *Utsangi bandha* (sling bandage)

The bandage which gives support to the slinging body part is called as *Utsangi bandh*. Now a days triangular bandage used as *utsangi bandh*. Two ends of this of triangular bandage are tied together and placed behind the neck. Then hand is placed in the broad piece of cloth and the third end is whirl around elbow joint and brought in front from behind the hand and then it is tied with safety pin to the main strip of bandage.^[6,8]



विलम्बिनि तथोत्सङ्गे॥

Changing of bandage according to dosha and kala^[13]

- 1) Paittika wound, in sharad & grishma ritu bandaging should be done twice a day.
- 2) In rakta dushita wound, also bandaging should be done same as that in paittika wound i.e.,

twice a day.

- 3) In shleshmika wound, in the hemant as well as vasant ritu bandage should be changed after 3 days. In this way, a physician should think about the bandaging method.

EQUIPMENT'S USEFUL FOR BANDAGING OF WOUND^[13,14]

- 1] kavalika (Cotton-pad) – Kavalika is a soft cloth used to protect wound from external injury. Acharya Sushruta explained usage of thick, dense cotton pad on a wound. Now-a-days instead of kavalika, cotton is used.
- 2] Vikeshika – (medicine impregnated pad). Cloth or piece of sutra on which kalka, ghruta, madhu, etc. are applied & kept on wound is called as vikeshika. By keeping vikeshika on the wound, the wound having putimansa, nadvrana & pus formation internally, heals quickly & makes the wound clean. Now-a-days also medicine is applied on gauze & packing is done in sinus cavity.
- 3] Pichu (Cotton Swab)- This is used in Surgical procedures for antiseptic cleaning and in Vranhikitsa. It is used for the lepana on yoni, guda, karna, etc. by applying medicated taila or ghruta on it.
- 4] Ploot (Swab or Gauze pack)- A piece of cloth which is used with water or kashaya to clean the wound is called as ploot. It's also used in preoperative procedure for skin painting.

INDICATION

Churnita (fracture causing small pieces).

Manthit (Dislocate)

Bhagna (Fracture of bone)

Vishlishtah (joints are affected)

Atipatiam (Hanging or suspended from its site).

Asthichhinna

Snaayuchhinna

Sirachhinna

Due to bandaging the patient gets sound sleep, walks, comfortably lies down, sits and rapid healing of wound.^[15]

CONTRA-INDICATIONS

Pittaraktdushti Abhighatvishnimitta – With presence of- Shoaf (oedema) Dah (burning

sensatoin), Pak, laailamaa, taod, vednaa(pain), etc. When the wound occurs due to alkali or burning due to the fire, causes wasting of muscle tissues hence bandage should not be applied. In kushtha patients - Persons burned with fire, Person having Diabetes and in rat poisoning cases, bandage should not be applied on wound also in karnika, toxic wound and mamsapaka and gudapaka^[15]

CONCLUSION

Ancient Acharyas described about Bandha (Bandaging of wound) in detail in *Sanhita*. This description suggests that they have sound knowledge of wound and its management properly. It is necessary to Learn and apply the principle of Bandhana for proper wound management. The above article highlights similarities and differences between Traditional Indian method and Modern method of bandaging. The concepts, theories, and techniques practiced several thousand years ago hold true even in today's practice.

1. SRB's manual of surgery page no 1164.
2. Kawiraj Ambikadutta Shastri, 2006, Susruta samhita, Sutrasthana, [18/3], Chaukhamba sanskrit Sansthan, Varanasi.
3. SRB's manual of surgery, 1164.
4. SRB's manual of surgery, 1164.
5. Kawiraj Ambikadutta Shastri, 2006, Susruta samhita, Sutrasthana, [18/16] Chaukhamba Sanskrit Sansthan, Varanasi.
6. Vd. Aanantkunar Shekokar, Edition 2014, textbook of Shalya tantra part 1st, chapter [12].
7. Kawiraj Ambikadutta Shastri, 2006, Susruta samhita, Sutrasthana, [18/17] Chaukhamba Sanskrit Sansthan, Varanasi.
8. Vd.P. G. Aathvale, 1998, Dushtarth Ashtang Sangrah, Pratham khand, Sutrathasn, [38/37-39]Dushtarthmla prakashan, Nagpur.
9. Vd.P. G. Aathvale, 1998, Dushtarth Ashtang Sangrah, Pratham khand, Sutrathasn, [38/48-50], Dushtarthmla prakashan, Nagpur.
10. Kawiraj Ambikadutta Shastri, 2006, Susruta samhita, Sutrasthana, [18/17] Chaukhamba Sanskrit Sansthan, Varanasi.
11. Shalya Vigyan, Edition 2018,Dr. Aashish Parikh,Textbook of surgery, chapter [12], Chaukhamba Surbharti prakashan, Varanasi.
12. Shalya Vigyan, Edition 2018, Dr. Aashish Parikh,Textbook of surgery, chapter [12], Chaukhamba Surbharti prakashan, Varanasi.

13. Aacharya Priyavat Sharma, 2016, vd. Vijay Shankar Kale, Charak Samhita Chikitsasthanam [25/96], Chaukhamba Sanskrit Sansthan, Delhi.
14. Kawiraj Ambikadutta Shastri, 2006, Susruta samhita, Sutrasthana, [18/19,20] Chaukhamba Sanskrit Sansthan, Varanasi.
15. Kawiraj Ambikadutta Shastri, 2006, Susruta samhita, Sutrasthana, [18/30-34], Chaukhamba Sanskrit Sansthan, Varanasi.