

A Review Article on Different Types of Incisions According to Sushruta

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ABSTRACT

The field of education in medical science is traditionally divided in two branches as one medicine and other surgery. The division was by the virtue of Agnivesha and Dhanwantarisampradaya exist in Ayurveda from early stage of human civilization. Sushruta is the major scholar of Dhanwantarisampradaya. Acharya Sushruta laid down the fundamentals of surgery in the very first surgical text in Indian history with all the basic protocols which are still now practiced successfully. Though due to the advancement of medical science, it introduced new techniques that completely transformed the practice of surgery over the period of time. Incisions are basics of surgery which has both Surgical and Anatomical importance. Surgical view of incision avoids cosmetic damage and anatomical view provides safeguard to vital structures. Acharya Sushruta stated specific incisions in relation to various parts of the body as well as in relation to the specific diseases. There are a number of incisions explained by Sushruta, like Tiryak, Chandrakara, Ardha-chandrakara, Langalak, Ardhalangalak etc. Hence an attempt was made to elaborate different types of incisions told in Sushruta Samhita with their scientific validation.

KEY WORDS: Incision, Sushruta Samhita

INTRODUCTION:

Sushruta was the first surgeon to develop the cosmetic surgery. From the treatise of Sushruta Samhita we come to know that thousands of years ago, sophisticated and scientific methods of surgery were practiced in India. Incisions are basics of surgery which has both surgical and anatomical importance. Surgical view of incisions avoids cosmetic damage and provides safeguard to vital structures. Acharya Sushruta stated specific incisions in relation to various parts of the body as well as in relation to specific diseases, by keeping the concept of Langer's lines in the mind.

Bhedhana¹-An incision is made to achieve effective drainage or expose of underlying structures to let the contents out.

Ideal incision²:

1. Aayata (Deerga-Adequate length)

2. Vishala (Vishteerna-Extensibility)
3. Sama (Samapaaka-Uniform cut edges)
4. Suvibhakta (Heena&atidoshamukta)
5. Nirashraya (Away from Jihwa, danta, asthi, marma)
6. Should have knowledge of Aama and pakvaavastha (Asamapaakopakva).

Direction of incision

Should be done in the direction of hairs. Incision should be along the longer lines for natural creases for cosmetic reason. That is why in certain operations in the neck though longitudinal incision would have been better for proper access, the transverse incision along the natural crease is preferred. This will diminish the likelihood of keloid formation.

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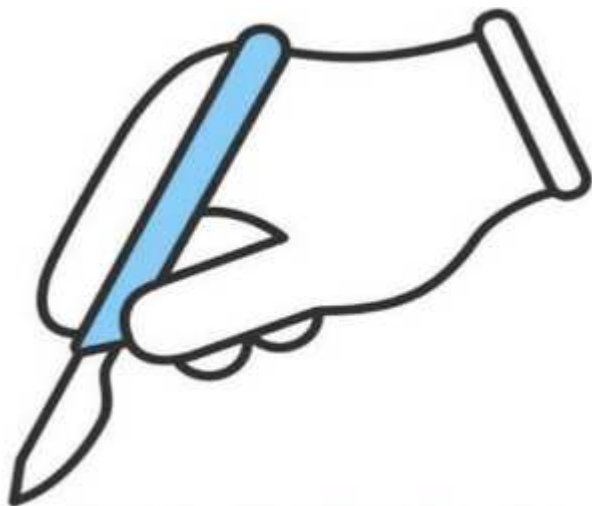


Improper incision: Injury to blood vessels and ligaments, severe pain, delayed wound healing and growth of keloids

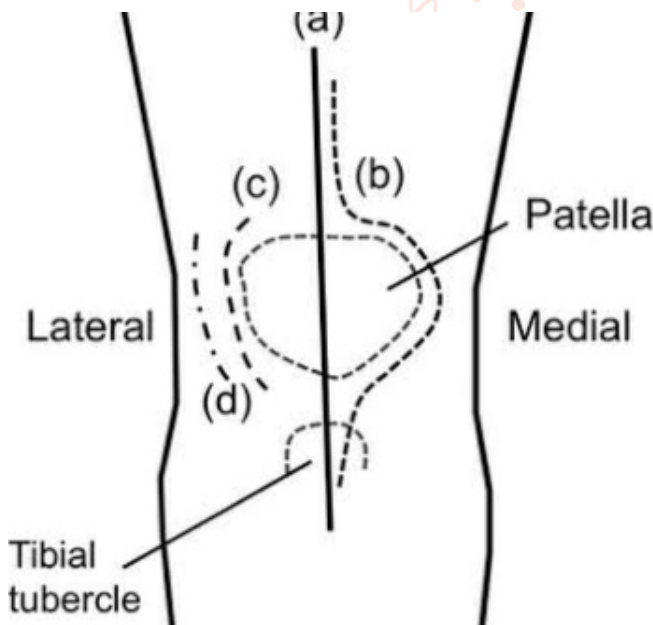
DIFFERENT TYPES OF INCISIONS ACCORDING TO SUSHRUTA SAMHITA²:

1. Single stroke Incision³:

Surgeon should face west and make incision in single stroke in direction of hairs, until pus is seen, saving themarma, sira, snayu, sandhhi and Asthi. The knife should be withdrawn softly.



Extension of incision: Should be 2 or 3 angula breadth only depend upon necessity.



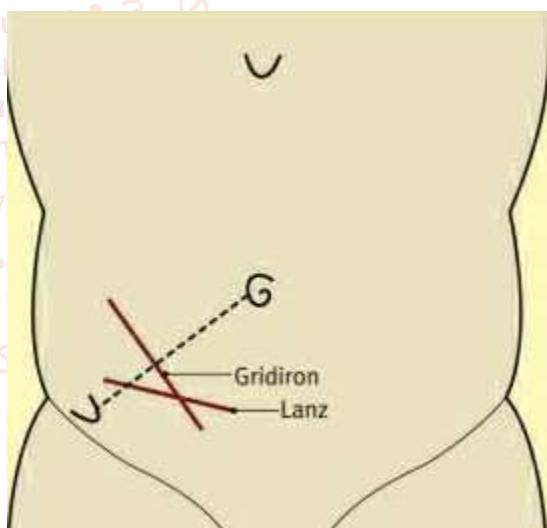
2. Counter incision³:

It should be given at some distance, according to once yukti, in case one incision is not enough to clear the wound completely. It should be given to provide adequate drainage. Sushruta had the knowledge of second incision use to promote drainage or to relieve tension on the edge of a wound. when the most prominent part is not the most

dependent part, complete drainage of pus is not possible with single incision. So a counter incision is required at most dependent part to facilitate drainage by gravity.



In this technique, through the first made incision on the most prominent part, a sinus forceps is passed to the most prominent part. The blades are slightly made apart, then with the knife a fresh incision is made on the skin between the tips of sinus forceps.



3. Multiple Incision⁴:

In whichever the direction tracks lead & wherever pockets (utsanga) are presents, at all those places incisions should be made so that pus (dosha) remains.

4. Oblique incision⁴: Incisions are made oblique over eye brows, cheeks, temples, forehead, eyelids, lips, gums, axilla, abdomen and groin regions.

Gridiron incision:

It is a muscle splitting oblique incision made at the right lower part of the abdomen.

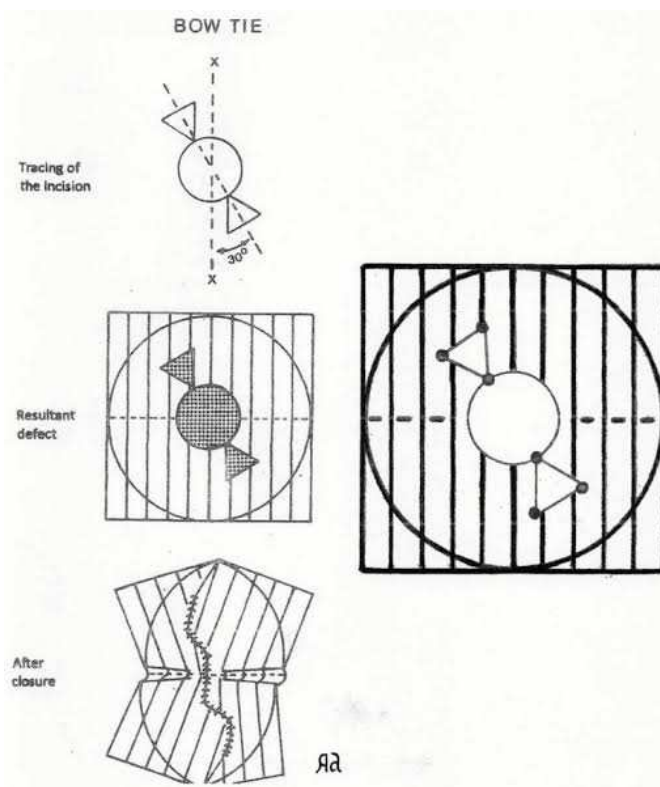
It is used for appendicectomy.

Rockey-Davis incision:

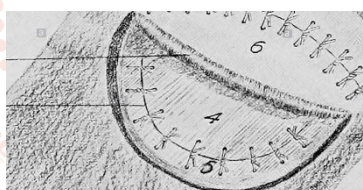
It is a cross over incision made at the right lower part of the abdomen. It is used for appendicectomy.

5. Circular incision⁵:

over palms and soles circular incision should be done.



6. Semicircular incision⁵: done over penis and in anal region.



IN GENERAL⁶ (su. Su 5/13, 14, 15)

SL NO	SITE	TYPE OF INCISION	ANATOMICAL STRUCTURE
01	Bhru (eyebrow)	Tiryak-Oblique (lateral eyebrow and supereolateral)	Relaxed skin tension lines and muscle fibres of orbicularis oculi
02	Shankha (Temporal region)	Tiryak-Gillis temporal incision, 2cm directed upwards and anteriorly	Placed between the anterior and posterior diversions of superficial temporal artery
03	Lalata (Forehead)	Tiryak-Horizantal, vertical and coronal incision	Temporal branch of facial nerve
04	Dantavestaka-Gums	Tiryak-Horizantal incision over gums of molar and premolar teeth.	Branches of linual artery, inferior alveolar artery and nerve may beat risk.
05	Kukshi (abdomen)	Tiryak	McBurneyinscion for Appendicectomy,
06	Vankshana (Inguino-femoral region)	Tiryak	Incision for Hernioplasty
07	Paani-paada (Hand-foot)	Chandramandala	Guillontine amputation
08	Guda-medra (Anal region-Penis)	Ardhachandrakara (semi circular)	Penile disorders-Semi-Circular incision from 3 to 9 o clock incision.

LANGERS LINES⁷:

Knowing the direction of Langer's lines within a specific area of the skin is important for surgical operations, particularly cosmetic surgery. If a surgeon has a choice about where and in what direction to place an incision, he or she may choose to cut in the direction of Langer's lines. Incisions made parallel to Langer's lines may heal better and produce less scarring than those that cut across. Conversely, incisions perpendicular to Langer's lines have a tendency to pucker and remain obvious, although sometimes this is unavoidable. The orientation of stab wounds relative to Langer's lines can have a considerable impact upon the presentation of the wound. Keloids are more common when incision is given across Langer's lines. [citation needed] Sometimes the exact direction of the collagen fibers^{are} unknown, because in some regions of the body there are differences between different individuals. Also, the lines described by Kraissl differ in some ways from Langer's lines, particularly on the face.

BAGANDARA⁸

In the management of different types of Bhagandara Acharya Sushrut recommended some incisions. Those incision have similarity in shape with some objects.

Shataponaka	7. Langlak	Langalak means "HAL" i. e. plough used by farmer in field. The incision should have two arm perpendicular to each other and extending on either side like "T".
	8. Ardhalanglak	Ardhalanglak means the incision should be same as above but with only one arm like half of HAL i. e. plough without handle. This may be similar to "L".
	9. Sarvatobadrak	Sarvatobhadrak means when there is requirement of circular (Mandalakar) incision around anal canal to open the fistulous track
	10. Gothirtak	Gotirthakincision should be similar to the "Khur" of cow. This may be correlated as semi-circular incision
Parisravi	11. Karjur Patrak	incision should having branches like the juncture of datepalm leaf. There is one main incision followed by secondary incision draining into deeper one.
	12. Chandrardha	Chandrardha that itself explaining, it should be semi-circular.
	13. Chandrachakra	incision should be like the circular like full moon.
	14. Suchimukha	. the pin point. This incision plan in two parts just like the two plane of a pyramid. The joint point of two incision making an acute angle should be towards anal canal.
	15. Avangamukha	This is almost similar to Suchimukha only the direction is reversed i. e. the meet point of two incision should away from anal canal.

16. **Vidradhi⁹**:Urdhwamadho incision is explained in pakwavidradhichikitsa.

17. **Udara¹⁰**: site of incision is explained in Baddhagudodara and Chidrodera as adhonabhivaama, chaturangala.

18. **Mudhagarbha¹¹**:Utkartana/ Muladharachedana Incision explained in Garbhasanga and Bhagasankocha. It is an act of cutting off with the help of special instrument called "KartariShararimukhashastra is used.

19. **Kakapadakaraincision¹²**-It is used in the vishasankramana. An incision in the shape of crow's foot should be made with sharp instrument on the scalp (of the patient) and skin or flesh with blood of (newly killed animal) should be placed over there for treating snake bite (Saptamavega) . The incision absorbs the visha and brings about chetanatva in victim.

DISCUSSION:

Acharya Sushruta opines that, incision should be, Ayata , vishala, sama, suvibhakta, Nirashraya, praptakalakruta. The principles of Langers' line, RSTL are similar to Sushrutas's Principles of Bhedana. - they both aim to minimize the damage of beneath structures. Surgeon can increase efficiency by considering the principles of skin incisions laid by Sushruta and serve the society. *Acharya Sushrut*for

the management of different types of *Bhagandar*. These types of incisions are well practiced by the modern as well as *Ayurvedic* surgeons in current time. Because most of the fistula in ano cases are low anal that may be successfully treated by fistulotomy and fistulectomy method. With these incision almost every potential space of perianal region can be approached which are essential for development of fistula in ano. These incision explore the cavity up to

maximum extents that helps in better and early healing of fistula in ano. So the incision advised by *Acharya Sushrutare* relevant and have very much importance in current scenario.

CONCLUSION:

Sushrutasamhita deals with Anatomy and Surgery and deliberates on many contexts of contemporary interests such as such as different types of incisions and describes in detail the surgical care of patients with purvakarma, pradhana karma and paschat karma procedures. special precautions were prescribed to spare the major structures and marmas of the body while making surgical incisions. Both chedhana and bhedana karmas have primary step as 'Bhedana. Sushruta's surgico-anatomical concept of skin incisions still as most important in surgical operations.

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