A REVIEW ON CONTRIBUTION OF ACHARYA SUSHRUTA IN EMERGENCY SURGICAL CONDITIONS

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ABSTRACT

Acharya Sushruta was the ancient Indian surgeon and also called as Father of Surgery. In ancient era when surgery was in its early childhood stage or not even heard of in other parts of the world, Acharya Sushruta performed surgery in various emergency conditions like Chhidrodara (intestinal perforation), Baddhgudodara (intestinal obstruction), Ashmari (urolithiasis), Sadyo Vrana (traumatic wound), etc. In his text Sushruta Samhita, he described all such types of diseases and their emergency surgery. His basic principles of plastic surgeries and concept of anesthesia are the privilege to emergency surgery. Ashtavidha Shastra Karma (8 types of surgical procedures), trauma bandage, emergency trauma suturing, management of Raktsrava (hemorrhage), replacement of blood volume, etc., are the basic principles of emergency surgery and given by Acharya Sushruta first. There are various advanced types of surgical procedures available in modern science for emergency conditions, but many of these surgical procedures are still following the basic principles as given by Acharya Sushruta and even after their development, in certain conditions they are still deprived of. So this paper focuses on review on the contribution of Acharya Sushruta in emergency surgical conditions.

KEYWORDS: Chhidrodara, Ashmari, Ashtavidha Shastra Karma.

INTRODUCTION

Sushruta Samhita, which describes the ancient tradition of surgery, is considered as one of the most ablaze treasure in the field of surgery. This tractate contains detailed descriptions of teaching and practice of the great ancient surgeon Acharya Sushruta which has significant knowledge of surgical emergency relevance even today. Because of his influential and countless contributions to the science and art of surgery, he is known by the title Father of Surgery. Acharya Sushruta has mentioned that if in emergency condition proper surgical procedure is not done, it can cause complications, make the disease incurable or lead into death of the patient. There are numerous contributions made by Acharya Sushruta in the field of emergency surgery including Nidaan (etiology), Samprapti (pathophysiology), Lakshana (sign and symptoms) and Bheda (classification) of various emergency conditions along with their surgical management e.g. Chhidrodara (intestinal perforation), Baddhgudodara (intestinal obstruction), Ashmari (urolithiasis), Sadyo Vrana (traumatic wound), etc. His basic principles of plastic surgeries and concept of anaesthesia are the privilege to emergency surgery. Acharya Sushruta was the first person who gave basic principles used in emergency surgery also e.g. Ashtavidha Shastra Karma (8 types of surgical procedures), trauma bandage, emergency trauma suturing, management of Raktsrava (haemorrhage), replacement of blood volume, etc. Shalya Tantra (branch of surgery) has some peculiar specialties like Ashukriyakarmaat (instantaneous action) Yantrasrastraksharagni Praanidhanat[1] (usage of blunt, sharp instrument, alkalization, cauterisation), etc. Due to these specialties, Shalya Karma (surgery) was done by Acharya Sushruta in conditions where urgent intervention needed like Chhidrodara etc. Acharya Charaka, also recommended surgeons to treat certain diseases that need immediate surgical intervention e.g.Arsha (Hemorrhoids)[2]. Although modern surgery has developed a lot nowadays but the basic principles used in many emergency conditions are same as given by Acharya Sushruta.

MATERIALS AND METHODS

All the references are collected and assimilated from Sushruta Samhita along with its various commentaries.

Observation: Various type of surgical emergency and their management described by Acharya sushruta are as follows.
Management of Sadhyo Vrana (traumatic wound): Acharya Sushruta has described 6 varieties of traumatic injury as Chhina (excised), Bhinna (incised), Viddha (punctured) Kshata (partially excised, partially incised), Pichchhita (crushed) and Grishta (abrasion)[8]. Acharya Sushruta has described Shodhana (purification), Ropana (healing), Bandhana (bandaging), Seevana (suturing) etc. methods in Shashti Upakramas (sixty therapeutic procedures) to treat wound[9]. The same principles are still used in modern practice to treat traumatic wound.

Management of Badhgudodara (intestinal obstruction): According to Acharya Sushruta, in case of Badhgudodara (intestinal obstruction), an incision should be given below the umbilicus, on left side leaving four finger breadths from the central. Four finger breadth of intestine should be taken out and leaving four finger breadths from the central. Four incisions should be given below the umbilicus, on left side, crushed and crushed), four finger breadths from the central line. Now reinsert intestine into its normal position followed by suturing[6]. This method of Acharya Sushruta is also in practice today as laparotomy in intestinal obstruction.

Management of Chhidrodara (intestinal perforation): According to Acharya Sushruta, in Chhidodara (intestinal perforation), incision is given in the same manner as in Badhgudodara (intestinal obstruction). At the site of perforation, anastomosis of intestine should be done by clinching the head of black ant. Now reinsert intestine into its normal position followed by suturing[6]. The idea of usage of biological substance as absorbable suture material is given by Acharya Sushruta for the first time. This is still useful in modification form e.g. in place of black ant we can use absorbable suture like catgut.

Management of Dakodara (Ascites): According to Acharya Sushruta, Vedhana Karma i.e. tapping is performed in case of Dakodara (ascites). Vrihimmukha Shastra (trocars) is inserted (upto the depth of thickness of the centre of thumb) below the umbilicus on left side, leaving four finger breadths from the central line. Now Nadi (cannula) is fixed to the trocar for removing fluid. After removal of fluid, abdomen should be bandaged tightly[7]. This procedure is used in today's practice as tapping of ascitic fluid.

Management of Asthi Bhagna (fracture) and Sandhimukti (dislocation): Acharya Sushruta has classified Bhagna into two categories named as Sandhimukti (dislocation- 6 types) and Kandbhagna (fracture- 12 types)[8]. For the treatment of Bhagna, basic principles like Aanchhan (traction), Peedan (manipulation), Sanksheph (apposition and stabilization) and Bandhan (bandage) are given by him. These are being practiced in modern orthopedics too[9].

Management of Raktasrava (haemorrhage): Acharya Sushruta has given 4 methods to stop bleeding.

1. Skandana - Use cold things e.g. ice which stops bleeding by coagulation and constriction of vessels locally.
2. Sandhana- Use Kashaya Rasa Pradhan Dravya which stops bleeding by coagulation.
3. Pachana- Application of Pachana Dravya which stops bleeding by coagulation.
4. Dahana- Cauterization of vessels with Kshara (chemicals) or Agni (heat) to contract the vessels locally[10].

Use of Agni to stop the bleeding during surgery, is the original concept of Acharya Sushruta which is later modified by the modern scientist in the form of electric cautery.

Management of Pramada Dagdha (Accidental Burns): Acharya Sushruta has described 4 types of Pramada Dagdha named as Plushtdagdha, Durdagdha, Samyakdagdha, Atidadgaha. Acharya Sushruta has given a detailed description of their symptoms according to the types along with the management like- Sheet Aalepa, Ghrit, Madhu local application over the wound, debridement of wound, covering it with leaves[11], etc. These methods are very much similar to modern methods of cleaning of burn wound with antiseptic agent, silver sulfadiazine local application, wound debridement, grafting, etc.

Urological Surgeries: Varieties of renal stones and method of their extraction (by perineal lithotomy) and operative complications have been given in detail in Sushruta Samhita. The concept of extraction of stone from the urinary bladder, by pushing the stone upward through inserting the finger in rectum, is unique method in surgery for vesical calculus given by Acharya Sushruta[12].

Replacement of Blood Volume in Abdominal and Thoracic Cavity Injuries: According to Acharya Sushruta, in case of perforation of anybody Kosthas (abdominal injury or thoracic cavity injury) followed by excessive haemorrhage, patient was made to drink (a portion of animal) blood[13]. This was a unique concept of Acharya Sushruta, which later utilized as blood transfusion in modern science.

Plastic surgeries by Acharya Sushruta Nasa Sandhana (Rhinoplasty): This is reconstructive surgery of nose first mentioned by Acharya Sushruta and established as a milestone in the field of plastic surgery[14].

Karna Sandhana (Otoplasty): Classification of mutilated ear lobe defects and techniques for repair.
Management of pain during surgery: Concept of relieving pain during surgery by using alcohol was first started by Acharya Sushruta and later this concept was developed more by modern surgeons to establish it as a separate branch of medical science known as Anaesthesiology.

Management of Vidradhi (Abscess): Acharya Sushruta has described 6 types of Bahya Vidradhi (external abscess) on basis of Doshas and 10 types of Anter Vidradhi (internal abscess) on basis of Sthana. According to Acharya Sushruta, surgeon should try to avoid suppuration, but if it begins to set in, incision should be given and cavity so produced should be washed with a decoction of the Vrihat Panchmulai. This procedure is also used in modern surgery under the term Incision and Drainage.

Management of Raktapitta (Bleeding Haemorrhoids): According to Acharya Sushruta, large sized haemorrhoids (in physically strong person) should be excised and cauterized. In case of bleeding from haemorrhoids, all measures of Raktapitta should also be used. Similar approach is done in management of bleeding haemorrhoids in modern science too.

Management of Prameha Pidika (Carbuncle): According to Acharya Sushruta, when Prameha Pidika (carbuncle) increases in size, attended with excessive pain and burning sensation, surgical intervention and other measures described for wound treatment should be used. This concept is still useful in carbuncle management.

Management of Stana Vidradhi (Breast Abscess): According to Acharya Sushruta, when suppuration had already taken place in Stana Vidradhi (breast abscess), surgery should be done to the effected part of breast and care should be taken that lactiferous duct, nipple and aerola should not be injured during surgery. Incision and drainage of breast abscess in today’s practice is based on the given concept of Acharya Sushruta.

Management of Arbuda (Tumours): According to Acharya Sushruta, Arbuda should be excised entirely. If small part of Doshas in a tumour left unremoved, it would lead to fresh growth of the tumour. This concept is also used in modern practice in excision of tumours.

Management of Pranashta Shalya (foreign body): Acharya Sushruta has given fifteen methods to remove Pranashta Shalya (foreign body) including incision. Many of these methods are used for removal of foreign body in present era also.

Surgical Procedures in Emergency: Acharya Sushruta has described Ashtavidha Shastra Karma (8 types of surgical procedures). It includes Chhedana (incision), Bhedana (incision), Lekhana (scraping), Vedhana (puncturing), Eshana (probing), Aharana (extraction), Visravan (draining) and Seevana (stitching). These are used in emergency surgery also.

Trauma Bandage (first aid in emergency): Acharya Sushruta has described for the first time various types of dressing and dressing medicaments to cover the wound. During bandaging, the use of cotton pad (Kavalika) to secure the wound from friction is the original idea of Acharya Sushruta. He has given fourteen types of bandaging capable of covering almost all the regions of the body. These dressings and bandaging methods are very useful in emergency trauma centers.

Emergency Trauma Suturing: Suture materials classification as absorbable, non-absorbable or synthetic, natural was first given by Acharya Sushruta. According to him, bark of specific plants, silk, hair, tendon, etc., are the suture materials. He also used black ants during the suturing of ruptured intestine. The idea of usage of biological substance as absorbable suture material is given by Acharya Sushruta for the first time. Acharya Sushruta has given 4 types of suturing methods named as Tunsevani (Halstead subcuticular), Gophanika (blanket suture), Rijugranti (interrupted) and Vailittaka (continuous) which are applicable in many emergency surgical repair in modern science also.

DISCUSSION
Acharya Sushrutases classification and management of Sadyo Vrana (traumatic wound) is nearly same as type and management of traumatic wound in modern science. Management of fracture and dislocation by traction, manipulation etc., in modern orthopedics is based on Acharya Sushrutases original principle of management of Bhagna with Aanchhan (traction), Peedan (manipulation), Sankshep (apposition and stabilization) and Bandhan (bandage). Basic steps by Acharya Sushruta, to open the abdomen and remove the cause of obstruction in surgery of Badhguodarara (intestinal obstruction) is modified as laparotomy in intestinal obstruction in modern practice. The idea of usage of biological substance as absorbable suture material is given by Acharya Sushruta for the first time. This is still useful in modification form e.g. in place of black ant we can use absorbable suture like cathgut. Acharya Sushruta use Vrihimukha Shastra (trocary) and Nadi (cannula)
CONCLUSION

Acharya Sushruta was the world's first surgeon who performed complicated surgery in emergency conditions like Sadyo Vrana (traumatic wound), Chhidrodara (intestinal perforation), Bahddhugudodara (intestinal obstruction), Ashmari (urolithiasis), etc., many years ago, which are being performed in present era too with some advancement. His concepts of management of emergency surgical conditions like Asthi Bhagna (fracture), Sandhi Mukti (dislocation), Pramada Dagdha (accidental burns), Vidradhi (abscess), Raktsravi Arsha (bleeding hemorrhoids), Prameha Pidika (carbuncle) Arbuda (tumours), Pranashta Shalya (foreign body), Stana Vidradhi (breast abscess), Rakatsrava (haemorrhage), replacement of blood volume, etc., are still in practice. His basic principles of plastic surgeries like Nasasandhana (rhinoplasty), Karnasandhana (otoplasty), Osthasandhana (cheloplasty) are milestones in the field of modern plastic surgery till today. Acharya Sushruta gave the concept of anaesthesia to world which has made surgery easy. Astavidha Shastra Karma (8 types of surgical procedures), trauma bandage, emergency trauma suturing, the basics of emergency surgery, are given by Acharya Sushruta first. Having worked as the pioneer, practitioner as well as the teacher of surgery, Acharya Sushratas' contribution towards the emergency surgical conditions will always be precious.

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