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PLACENTAL MEMBRANE THE NEW MILE STONE FOR THE DRESSING OF LSCS STICH LINE

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ABSTRACT

Placental extract will aid magic in era of wound healing. Our purpose of the study is to highlight the use of placental membrane as a source of dressing due to easy availability and negligible cost. In our study placental membrane found to be versatile and useful biological dressing. In our study we involved 100 patient of LSCS. **Background:** We include the 100 patients of emergency and elective LSCS and instead of traditional dressing we used the placental membrane as a biological dressing. Due to healing properties and least post-operative complications, we found placental membrane as a new source of dressing for LSCS case.as it biodegradable so not causes the environmental pollution. Our purpose of study is to motivate and promote the placenta as a natural dressing as it is without side effect and normally we discard the placenta although it is full of healing property and environmental friendly.so it can become the revolutionary to use the placenta to save the earth as it will decrease the medical wastage burden of bandage and adhesive on nature. **Result:** Placental dressing is autologous product with no immunologic rejection so for remote area it is a boom. It also reduce the cost of caesarean by avoiding the use of adhesive and bandage.

KEYWORDS: Placental Membrane, Caesarean.

INTRODUCTION

Right from the days of sushruta in Ancient India, due to frequent battles and wars, healing of wounds was matter of concern for all including ancient Chinese, Korean, Egyptian and African healers. Sushruta Samhita has two separate chapters dealing with healing of these wounds, and describes more than 100 plants for treatment of wounds both singly and in combination.[1]

Use of placenta as a therapeutic agent has been prevalent for a long time. It is an immunologically privileged organ and has unique pharmacological effects like enhancement of wound-healing, anti-inflammatory action, analgesic effect etc. A variety of substances with biological and therapeutic activity present in human placenta, have been isolated and identified as hormones, proteins, glycosaminoglycans, nucleic acids, polydeoxyribonucleotides (PDRNs) etc.[2]

In 1910 Dr. John. Davis of the Johns Hopkins hospital transplanted & grafted pieces lining of the amniotic sac. The result was unpromising.

Fetal MSCs has higher proliferation & differentiation potential than adult MSCs. These cells has high growth kinetic (fetal 30-35 v/s adult 80-100h).[3]

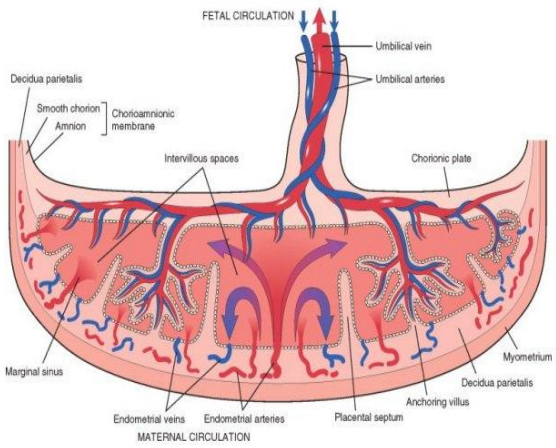
In India, several studies have been made on the drug used as wound healer. The extract is a potent biogenous stimulator and abundantly used as an efficient wound healer (Punshi, 1981). Broadly speaking, an aqueous extract of human placenta has the following actions in the body: it accelerates cellular metabolism providing the energy for the inflammatory response to occur. It also aids in absorption of exudates by controlling its formation, removal of unhealthy tissue by debridement and management of bacterial load that are required for good wound bed preparation (Hong et al., 2010). It stimulates tissue regeneration processes.

Aqueous extract of placenta contain nucleotides like PDRNs and NADPH that are known for their regeneration effect (Nelson and Cox, 2000). In addition, it also supplements growth factors and small peptides that help in matrix formation Clinical evaluation of the aqueous extract revealed that it has anti-inflammatory and anti-platelet aggregation activity. As reported the extract exhibits anti-inflammatory response probably either through inhibition/inactivation of chemical mediators or by directly modulating prostaglandin (PG) production by suppression of cyclooxygenase (COX).Kinins, chemical mediators of nonimmunological type of inflammation, have two membrane receptor B1 and B2, for their activities. It has been reported that in

cotton pellet induced subacute inflammation model, the extract may act as inhibitor of the B1-receptor thereby exerting its anti-inflammatory effect. It also helps in activation of the clotting cascade by trauma which results in platelet activation, followed by aggregation. The clinical study of platelet aggregation reflects that this extract can either inhibit PGs synthesis pathway or 5-hydroxytryptamine (5-HT) release.

synthesis in vivo in rats. The significant increase in tensile strength and tissue DNA in the animals given the extract (intra muscular) indicates it was associated with marked collagen synthesis. The cytoplasmic repairment was revealed from regeneration of protein in appreciable amount. The efficiency of formation of collagen depends mainly on the synthesis of hydroxyproline, which was also shown to be appreciably high in the i.m. treated rats with the extract. These evidences In addition, an aqueous extract of human placenta has also shown to stimulate collagen, as reported, were further supported by pictures of histopathological changes showing maximum accumulation of collagen fibrils and epithelialisation (Biswas et al., 2001).

Human and animal models show that placental extract has an immunostimulating action both at cellular and humoral levels. It probably increases IgG and IgM at the humoral level and total lymphokines at the cellular level. It also reports several advantages over antibiotics and chemotherapeutic agents in terms of antibacterial activity including vascularisation of wound environment and is free from side effects (Chakraborty et al., 2009).[4]



human placental membranes are a rich source of MSCs, collagen matrix, and growth factors, and they can support tissue regeneration and repair.[5,6] Placental membranes have a long history of use for wound treatment, and their beneficial effects have been, in part, attributed to their anti-inflammatory, antimicrobial, and angiogenic activities.[7–10] The membranes also create a moist environment, which is important for healing.[11] Currently, there are more than 25 commercial placental products, but they are all devitalized. Grafix® (Osiris Therapeutics, Inc., Columbia, MD) is a cryopreserved, human placental membrane and the only commercially available placental membrane product to contain viable endogenouscells.

Human amniotic membrane has been used successfully as a temporary biologic dressing in diverse clinical situations. Histologically the membranes consist of two loosely connected tissues, amnion and chorion. The amnion or inner layer, is derived from the epiblast and is continuous with the embryonic ectoderm.[12]

The inner surface is composed of cuboidal or flattened epithelial cells; the outer surface is covered with mesenchymal connective tissue. The chorion han a mesenchymal component in contact with the amnion, and an external ectoderm composed of transitional epithelium.[13]

PE contains biologically active substances such as vitamins,hormones and polypeptides enzymes. The extract is rich in DNA and RNA. The placental extract contains peptides similar tohypothalamic factor and have corticotrophin releasing factor (CRF)like activity on the release of endogenous steroid which inhibitsphospholipase A2 thus preventing the release of prostaglandins andleucotrienes the principal chemical mediators of inflammation. The nucleotides are known for their tissue regeneration effect through the unique process of protein synthesis.[14]

AIM & OBJECTIVE OF THE STUDY

The aim of our study is

1 To use the placenta as a dressing source because it is natural biological dressing, easy available and low cost.
2 It provide good healing and have no chance of immunological rejection as it is autologous.
3 To decrease the contamination of the stitch line by the bandage dressing.
4 To introduce the use of placenta as a routine dressing in LSCS in remote areas where some time dressing material not available.
5 The cost of LSCS reduced by avoiding the use of adhesive, bandage and cotton.
6 as the placenta is biodegradable so doesn't causes the environmental pollution. if in cesarean we motivate to use the placental dressing, then we can help to save the earth as bandage and adhesive wastage generate the environmental pollution.
7 by using the placental membrane as a dressing we can give our future generation, healthy and pollution free environment.

MATERIAL AND METHODS

In the open study 100 cesarean patient were selected which have age between 18 year to 35 years, undergoing the elective and emergency cesarean, were included in study after informed consent The study was conducted in obstetric department of Vishakha Hospital Jaipur.

Patient exclude from study

1 who have drug hypersensitive
2 hepatic or renal impairment
3 pt. refuse for the consent
4 HIV, HBsAg
5 Endometritis
6 foul smelling placental membrane
7 diabetic
8 Immunocompromized patient.

All patient were investgated & treated & microbial coverge done according to hospital protocol.

Study was done between May 2016 to December 2016. Pt. LSCS was done at VISHAKHA HOSPITAL were elective & emergency due to precious baby, abnormal presentation, foetal distress &, APH, PROM with NROL, CPD, deep transverse arrest, preeclampsia, contracted pelvis any other emergency conditions.

Total 100 case we included in study routine investigation was done for cesarean. Antibiotic single dose coverage was given. LSCS done by transverse incision. LSCS done in usual single layer with vicryl no 1.Peritoneum closing done. Skin closing done by subcutaneous stitches. After subcutaneous dressing stitch line was cleaned with normal saline and betadine. Placental membrane without separating, applied firmly over the stitch line so that no air pocket should be left between membrane. Pt.was examined an day 1,2 and 3 day. On day 3 (after 48 hrs) dried placental membrane were removed from stitch line. Betadine lotion applied over the stitch line and patient was discharge.

OBSERVATION

Post operative out come assessment done by following points

1. Redness at the operation site
2. Irritation
3. Discharge at wound site.
4. Type of discharge (watery, serous and purulent)
5. Smell of discharge (foul smelling)
6. Oedema
7. Induration

The average age group was 18 to 35 years. Normaly dressing was done after 48 hrs. as dressing became dry and easily seperated from skin. No need to cut off the stich as stitch was subcutaneous. Patient can be discharged on day 3. post opearativly

Total Hospital Stay

Day	Percentage	Number of PT.
3 DAY	85%	85
5 DAY	10%	10
7 DAY	2%	2
More (Resuturing Done)	3%	3

Psychological Satisfaction

Very Satisfied	85%
Less Satisfied	15%

Cause of Dealyed Discharge

Cause	Percentage	Number of PT.
Pain	10%	10
PUS Discharge	5%	5
Wound Re-Open	3%	3

DISCUSSION

All biologic dressings currently used (cadaver skin allograft, pigskin xenograft and human amniotic membrane) serve specific function:

- Reduction of bacterial contamination and prevention of further contamination.
- Reduction of fluid,protein,heat and energy loss.
- Reduction of pain.
- Promotion of healing.
- Protection of underlying structures.
- Increase in mobility.
- Prediction of tissue viability when such is initially questionable.
- Preparation of full-thickness defects and recipient sites for autografting or delayed closure.
- Psychologic improvement in the patient.

Morris, Bondoc and Burke et al believed that this antibacterial effect lay in the intimate closure of the open wound provided by the biologic dressing, which prevented further bacterial contamination and allowed the host's defense mechanisms to deal with the infection effectively.

Larson et al found that the decrease in the count of bacteria paralleled the rapid increase in the count of leukocytes beneath the graft. This was confirmed by Say men and colleagues,'.

Joseph S. GRUSS et al,found that human amniotic membrane has proven equal to auto-graft skin and superior to allograft and engraft skin in decreasing bacterial counts in open granulating wounds.

Of human amniotic membrane.Lyso-zyme,a bactericidal protein, is pre-sent in high concentration in human amniotic membrane, and progesterone, which is bacteriostatic for certaingram-positive organisms, is also present.[15]

Ajay Chandanwale et al Fibrogenesis,neoangiogenesis and epitelisation are accelerated following the use of placental extract. Human and animal modelsshow that placental extract has an immunotropic action both at cellularand humoral levels. It increases IgG and IgM at the humoral level andtotal lymphokines at the cellular level. It has several advantages overantibiotics and chemotherapeutic agents in terms of antibacterialactivity, vascularisation of wound environment and wound

healing. Itis free from side-effects. Our results also support this fact as wounderythema and discharge in PE treated group were comparable to thatof PI group. Placental extract improves proliferation in primarycultures of human epidermal keratinocytes. This water solubleproperty of PE is 50 times more potent than epidermal growth factor.PE contains fibroblasts growth factors, naturally occurring aminoacids, nucleotides and vitamins which stimulate cellular biosynthesisby favouring the turn over of collagen.[16-17]

Gary W. Gibbons et al Grafix is a human cryopreserved placental membrane in which all components of the native tissue are preserved: three-dimensional extracellular matrix, growth factors, and viable cells, including epithelial cells, fibroblasts, and MSCs.

Clinical data indicate that Grafix can be beneficial for treatment of a broad variety of wounds, including non healing DFUs, VLUs, pressure ulcers, surgical dehiscence, wounds with exposed tendons and bone, and others.

Grafix is regulated as a human cellular tissue product and can be used for the treatment of both acute and chronic wounds. It offers wound care providers a treatment modality for wounds of different etiologies.

Johnson, Eric L. et al Occupational burn injuries can be detrimental and difficult to manage. The majority of complex cases are referred and managed at regional burn centers where access to specialized care is available. As an alternative to hospitalization with staged surgical procedures, placental products may be used for outpatient medical management of these common burn injuries, especially if access to a regional burn center is limited or restricted.

Fresh amnion has been a treatment of choice in burns for more than 100 years. As a biological covering with a broad scope of potential uses, human placental membranes represent a dressing that is particularly advantageous for burn therapy. Recent advances in tissue-preservation technology have allowed for the commercialization of placental amnion products.[18]

Piyali Datta Chakraborty et al Human placental extract that is used as a wound healer, acts as a stimulating agent for tissue repair. It has an effective inhibitory role on the growth of different micro-bes like bacteria, e.g. Escherichia coli, Staphylococcus aureus and fungi, e.g. Saccharomyces cerevisiae, Kluyvero-myces fragilis and Candida albicans. It also prevents growth of clinically isolated bacteria, e.g. E. coli from urine and blood culture and S. aureus from pus. Drug-resistant strains such as E. coli DH5αα Pet-16 AmpR and Pseudomonus aeruginosa CamR were also significantly inhibited by the extract. The extract has both bacteriostatic and fungistatic activities.[19]

in our study we found that as placenta is autologous and easy available and various study shows it is very effective, cheap and nonimmmunogenic dressing.

CONCLUSION

Human amniotic membrane was used successfully as a temporary biologic dressing for various wounds in 100 patients. The membrane can easily obtained, at little or on cost. It provides excellent wound coverage and has distinct advantages compared with other biologic dressing. It can become a alternative to bandage dressing. For remote area it can become a boom. Even patient feel psychological well by postoperative pain free dressing and early recover As this is ecofriendly, it is boom for future and decrease the bacterial overloading in enviorment due to bandage dressing. Patient remain psychologic relaxed, due to pain free dressing.

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