

USE OF COLLAGEN DRESSING (HEALICOLL) IN THE TREATMENT OF PRESSURE SORE

Dr. Vinoth Philip DNB (Plastic Surgery)
Shree Sudharson Hospitals, Vannarpettai, Tirunelveli, TN, India

Introduction:

Pressure ulcers have affected humans for ages, and addressing the overall management of pressure ulcers is now a prominent national healthcare issue. Despite current interest and advances in medicine, surgery, nursing care, and self-care education, pressure ulcers remain a major cause of morbidity and mortality. This is particularly true for persons with impaired sensation, prolonged immobility, or advanced age. The taxonomic description of pressure ulcers lacks general consistency.^{1,3,4} Textbooks refer to these lesions in various ways, usually in regard to the depth of the lesion based on macroscopic and morphologic criteria.² The ulcers are often referred to as pressure sores, bedsores, or decubitus ulcers (from the Latin word *decumbere*, which means "to lie on one's side").

The National Pressure Ulcer Advisory Panel (NPUAP) is an independent nonprofit organization formed in 1987 and dedicated to the prevention, management, treatment, and research of pressure ulcers. The NPUAP defines a pressure ulcer as an area of unrelieved pressure over a defined area, usually over a bony prominence, resulting in ischemia, cell death, and tissue necrosis.

Many factors influence the development and healing of pressure ulcers. Nursing plays a pivotal role in this challenging and complex process, using a multifaceted approach involving skin care, pressure relief, and nutritional support. Collagen is a very efficient hemostatic agent because platelets adhere to collagen, swell and release substances that initiate hemostasis (Hovig, 1968; Zucker & Borrelli, 1962). Furthermore, collagen can provide both positive and negative active polar sites. Collagen is also a molecule of sufficient size for platelet aggregation (Wilner, et al., 1971). The platelets adhere to collagen more closely than they adhere to the undigested sub-endothelial surface (Baumgartner, et al., 1980). Various other studies have demonstrated that collagen is an effective hemostatic agent (Abbott, 1974, Beachey et al., 1979, Sanborn, 1993). Prevention is the key to managing pressure ulcers, and it begins with a complete medical and nursing history, a risk assessment, and skin examination when the patient is admitted.

This Article focus on the use of collagen dressing for the various pressure sores. This is a study of 9 patients in whom the collagen(Healicoll) was used.

Method:

In all case first the patient is given alpha bed and advised frequent change in position. Then the patient is investigated thoroughly for the co morbid diseases. The pressure sore is debrided off the slough and necrotic tissue. Hemostasis is attained. Then the healicoll collagen sheet of required size is taken and meshed to allow drainage of the fluid. Then it is applied over the wound and a non sticky dressing is applied over the collagen and the dressing is secured with bulky dressing and dynaplast.

SELECTION OF CASES:

9 patients were selected for study.

1.INCLUSION CRITERIA:

- A.Hemodynamically stable patients
- B.Young paraplegic patients after spine stabilization
- C.Old diabetic, COPD patients recovered from the illness

2.EXCLUSION CRITERIA:

- A. Severe moribund patients on ventilator
- B. Severe resistant spastic paraplegics

AGE AND SEX:

Age varied from 29-75. Out of nine cases seven were male and two were female. Three patients were diabetic and were put on insulin and three patients were COPD. One had parkinsonism.

Observations:

Out of nine cases Five were sacral pressure sores. Two were ischial pressure sores. Two were trochanteric pressure sores.

one sacral pressure sore was present in a young(29 yrs) paraplegic who had his spine stabilized. He was first taught to get used to lateral and prone position. First the abcess in the wound was let out and all dead tissues debrided. Then his wound was dressed with meshed collagen sheet (Healicol). After the collagen is applied a non sticky dressing is applied over that and then a padded dressing is applied the dressing was changed once in three days. Good granulations appeared in just three dressings and as the size of the sore was large he was taken for flap cover and all wounds healed in two weeks time. Then he was mobile in a wheel chair.

Two of the sacral pressure sores of size 3*4 cms healed primarily without any requirement for flap cover.

One of the trochanteric sore had a big cavity so after applying collagen(healicol) the cavity was packed with cemic granules (cerapex) and then given padding. This wound also the dressing was changed once in three days the granulation appeared very fast than regular dressings and after two weeks the wound was covered with transposition flap.

Other wounds got ready in 10 days time for flap cover. The granulation tissue appeared faster than other routine dressings and the wound bed was covered with healthy granulation tissue.

Results:

2 sacral sores healed primarily. 3 sacral sores, 2 ischial sores, 2 trochanteric sores were covered with flap cover in ten days time. Slough clearance and granulation tissue appearance was very quick with collagen dressings in all the wounds. This result was equivalent and much better than negative pressure wound therapy.

Review of Literature:

Collagen is the most abundant protein in the human body. The synthesis of collagen plays a very important role in the early phases of the process of healing and formation of granulation tissues, which afterwards will form a healing tissue. Inside this process the collagen formation is due to the action of cytokines and the interaction between extracellular matrix and fibroblasts. The macrophages control the liberation of collagen by fibroblasts by means of so called growth factors PDGF, (Platelet Derived Growth Factor), EGF (Epidermic Growth Factor), FGF (Fibroblasts Growth Factor) and TGF-beta (Transformer Growth Factor). From 1976 the collagen was typified as a sanitary product by American FDA (Food and Drug Administration) and has been used in this country as a dressing in the healing of chronic wounds. Exogenic collagen facilitates a fast healing of the wound, induces wound excision and new tissues'

development and afterwards is absorbed by the native collagen in the bed of lesion. In the United States there are presentations of exogenic collagen in the form of micronized powder, gels, dressings and bands

Stoop (1970) summarized his experiences using collagen in the treatment of pressure sores. The following was observed after collagen application:

1. Wounds were clean and bacterial infection was retarded.
2. Wound secretion and drainage were reduced.
3. Improvement in the formation of new granulation tissue was noted.
4. Undermined edges of the pressure sores were closed.
5. Increased production of granulation tissue.
6. No contractures in closed wounds.
7. Moist pressure sore fissures showing no tendency to heal were closed.
8. No immunological reactions toward collagen were noted.
9. General patient condition improved

Conclusion:

There are many different methods of treatment for pressure sore. This method of using collagen sheet(Healicoll) for pressure sore has improvised the approach for treating all types of pressure sore. Small pressure sore heals with collagen dressing itself. Large pressure sore is prepared early for surgical closure and the morbidity of pressure sore is reduced to a great extent. So this study will set a milestone for the future big study of role of collagen in pressure sore and we are conducting a comparative study of negative pressure wound therapy with collagen in pressure sore.

BIBLIOGRAPHY:

1. E. Torra i Bou, Rueda López, J.F. Martinez Cuervo, J.J. Soldevilla Agreda. Interdisciplinary Chronic Wounds Unit, Consorci Sanitari de Terrassa and Grupo Nacional para el Estudio y Asesoramiento en Úlceras por Presión y Heridas Crónicas (Spanish Pressure Ulcers and Chronic Wound Panel), Terrassa, Barcelona
2. Hugo Mendieta Zerón MD, Fernando Edgar Krötzsch Gómez PhD, Rolando Efraín Hernández Muñoz PhD Pressure ulcer: A study for treatment with collagen;
3. Lee SK, Posthauer ME, Dorner B, Redovian V, Maloney MJ Pressure ulcer healing with a concentrated, fortified, collagen protein hydrolysate supplement: a randomized controlled trial. Northeast Surgical Associates of Ohio Ltd., Independence, OH, USA
4. Journal of American Geriatric Society 2003, (51):2, pp. 147-154

A case of sacral pressure sore



Sacral pressure sore



10 DAYS post Healicoll dressing



Post flap cover with drain system



Completely healed using Healicoll