

PAPERS

Securing Jugular Central Venous Access Devices with Dressings Fixed to a Liquid Adhesive in an Intensive Care Unit Population: a Randomised Controlled Trial [\[View Study\]](#)

Pearse et al. *Trials*. 2022 May 12;23(1):390.

- CVADs can have high rates of failure due to dressing-related complications. CVADs placed in the internal jugular vein are at particularly challenging and at risk of dressing failure.
- This study will be the first randomized controlled trial to evaluate effectiveness of Mastisol liquid adhesive in an adult ICU population.

Improving Vascular Access Dressing Integrity in the Acute Care Setting: A Quality Improvement Project [\[View Study\]](#)

DeVries et al, *Journal of Wound Ostomy Continence Nursing*. 2021 Sep-Oct 01;48(5):383-388.

- Assessed peripheral IV (PIV) dressing adherence following implementation of care bundle including Mastisol in a pilot study. Continued to collect post-implementation data for 18 months.
- In Pilot Trial with Mastisol:
 - Fully Intact PIV dressings increased from 55% to 93%. [Goal was 80%]
 - Insertion Site Exposure decreased from 15% to 0%.
 - Based on these Results, Mastisol and Detachol were implemented into dressing bundles
- Over 18-months post-implementation 30,000 dressing sites have been assessed.
 - 95% of Dressings have been observed to be fully intact.
 - There was no increased incidence of MARSII following Mastisol inclusion into care bundle.

A Comparison of Methods Used to Secure Pediatric Endotracheal Tubes Using a Live Human Dermal Model [\[View Study\]](#)

Gamble et al, *Canadian Journal of Anesthesia*. 2021 May;68(5):645-652.

- An experiment was conducted to measure the force required to disrupt an endotracheal tube (ETT) in a live dermal model with 24 different securing methods: 6 types of tape alone and in combination with one of three supplementary adhesives. A total of 1,164 measurements were made.
- The combination of Cloth Adhesive + Mastisol was found to have the greatest mean force to displace an endotracheal tube.

Evaluation of Compatibility of a Gum Mastic Liquid Adhesive and Liquid Adhesive Remover with an Alcoholic Chlorhexidine Gluconate Skin Preparation [\[View Study\]](#)

Ryder and Duley, Journal of Infusion Nursing, Jul/Aug 2017;40(4):245-252.

- Mastisol is compatible with CHG and does not impact the antiseptic effectiveness of CHG.
- No significant difference in bacterial populations following use of ChloroPrep only, when compared to bacterial populations following use of ChloroPrep with either Mastisol or Detachol both 3 and 7 days post-application.
- No Adverse Events occurred during the study including skin reactions and skin damage.

Evaluation of Synthetic glue for the Fixation of Continuous Peripheral Nerve Catheters [\[View Study\]](#)

Bloc et al. Annales Françaises d'Anesthésie et de Réanimation, 2008 Jan;27(1):103-5. Epub 2007 Dec 27. [Article in French]

- Mastisol was evaluated in 60 patients to secure and maintain correct position of continuous peripheral nerve catheters to secure and maintain catheters in the correct position among 60 patients.
- Mastisol allowed for an effective catheter fixation in 94% of cases.
- No complications were observed.

Reinforcement of subcuticular continuous suture closure with surgical adhesive strips and gum mastic: Is there any additional strength provided? [\[View Study\]](#)

Yavuzer et al, American Journal of Surgery, 2005 Mar;189(3):315-8.

- Compared burst strength of skin closure with sutures alone vs sutures with adhesive strips, with and without Mastisol.
- Mastisol significantly increased the adherence of adhesive strips.
- Mastisol significantly improved the burst strength of wounds closed with adhesive strips alone.

The optimal application of surgical adhesive tape strips [\[View Study\]](#)

Katz et al, Dermatologic Surgery, 1999 Sep;25(9):686-8.

- Investigated the optimal pattern of surgical strips needed to maximize adhesiveness.
- Failure to coat the skin surface with Mastisol was detrimental to strip adherence.

The postoperative use of wound adhesives. Gum mastic versus benzoin, USP [\[View Study\]](#)

Lesesne, CB. Journal of Dermatologic Surgery and Oncology. 1992 Nov;18(11):990.

- Compared Mastisol and tincture of benzoin for adhesive properties and potential complications in a study of 300 patients with wound closure strips.
- After 5 days, 60 (40%) patients in the tincture of benzoin-treated group vs 10 (7%) in the Mastisol-treated group showed signs of loss of adhesiveness.
- Temporary contact dermatitis developed in 38% patients in the tincture of benzoin group (57 cases) vs. 0.7% (1 case) in the Mastisol group.
- Four patients in the tincture of benzoin group developed superficial skin infection vs. zero in the Mastisol group.

The Influence of tape type & of skin preparation on the force required to dislodge angiocatheters [\[View Study\]](#)

Patel et al, Canadian Journal of Anesthesiology, 1991, Vol. 41, 738-741.

- Investigated the force needed to dislodge IV catheter secured with various tapes, both alone and with the addition of Tincture of Benzoin or Mastisol.
- Pretreatment of skin with Mastisol significantly increased the pullout force needed to dislodge the catheter for all tapes tested, either alone or with tincture of benzoin pretreatment.

An Evaluation of Wound Closure Tapes [\[View Study\]](#)

Moy et al, Journal of Dermatologic Surgery and Oncology, 1990, Vol. 16:8, 721-723.

- Compared adhesive properties of 7 different wound closure strips with and without Mastisol.
- Mastisol significantly increased the adhesiveness of all wound closure tapes tested.

Reinforcement of surgical adhesive strips [\[View Study\]](#)

Mikhail et al, Journal of Dermatologic Surgery and Oncology, 1986 Vol. 12(9):904-5, 908.

- Compared Mastisol and tincture of benzoin for their abilities to increase the adhesive power of wound closure strips
- Mastisol was found to be significantly better than tincture of benzoin in increasing adhesiveness.

CASE STUDIES

Quality Improvement Initiative: Maximizing Dressing Adherence to Minimize Infections

[\[View Study\]](#)

Steere L., Hartford Hospital, Intravascular Quarterly, Aug/Sept 2021

- Assessed prevalence of CVC dressing disruptions before and after Mastisol was added to CVC dressing change procedure.
- Pilot Trial in CICU: Non intact dressings decreased from 77% to 0% (partially or totally detached) when Mastisol was applied.
- Post-procedure kit implementation, whole-house audit: 79% fully intact, compared to just 24% pre-product implementation. Based on success with CVC dressing adherence, may eventually become standard of care for PIV dressings.

Allergic contact dermatitis to compound tincture of benzoin [\[View Study\]](#)

James et al. Journal of the American Academy of Dermatology. 1984 Nov;11 (5 Pt 1):847-50.

- Evaluated West Point military cadets during basic training for allergic contact dermatitis following treatment for friction blisters with tincture of benzoin or Mastisol.
- 16/~4500 cadets (0.3%) treated with tincture of benzoin developed contact dermatitis severe enough to render them unfit for duty.
- 0/2200 (0%) cadets treated with Mastisol over 2 years developed contact dermatitis.

POSTERS / PRESENTATIONS

Impact of Using Gum Mastic Liquid Adhesive on Integrity & Durability of Driveline Dressings to Reduce Risk of Infection and Improve Quality of Life [\[View Poster\]](#)

Vowels, Dignity Health/Mercy General Hospital, CA, Poster Presentation at the 67th Annual ASAIO Conference, 2022.

- Addition of Mastisol improved LVAD driveline dressing durability; 98% achieved 7 days with intact dressings compared to 32% in control group.
- Skin condition was comparable in both groups across all measures.
- Fewer dressing changes led to annual cost savings of \$553.28 per patient.

Use of Gum Mastic Medical Adhesive to Maintain Central Venous Access Device Dressing Integrity [\[View Poster\]](#)

Nelson Squires, et al. Banner Health, North Colorado Medical Center, CO, Poster Presentation at the Association for Vascular Access Annual Scientific Meeting, 2019.

- Zero (0%) early dressing disruptions occurred among the 33 patients in the gum mastic group. Thirty-five (35%) control patients required early CVAD dressing changes due to dressing disruption.
- No patient in either group developed CLABSI.
- The cost of unscheduled CVC dressing changes is double the expense of adding Mastisol, not including staff time.

Quality Improvement Initiative Results in the Standardization of Processes for Central-Line Associated Bloodstream Infection Prevention and Increased Adherence to Best Practices [\[View Poster\]](#)

Aldi et al. The Hospital of Central Connecticut, CT, Poster Presentation at the Association for Vascular Access Annual Scientific Meeting, 2018.

- After Mastisol & Detachol Implementation the percent of observed intact dressings increased from 16% to 88%.
- Average days of dressing adherence increased from 2.7 days to 5.0 days.
- No CLABSIs were observed during this initiative.

From PRN to Routine...A vascular Access Team's Journey to Reducing PRN Central Venous Catheter Dressing Changes By Adding to the Vascular Access Tool Box [\[View Poster\]](#)

Jameson, L. UC Health Memorial Hospital, CO, Poster Presentation at the Association for Vascular Access Annual Scientific Meeting, 2018.

- Assessed rate of CVC dressing changes due to non-adherence and soiling after implementation of Mastisol and a tissue adhesive into practice
- Over an 8-month period after Mastisol and tissue adhesive were implemented: PRN dressing changes decreased by 31% and loose dressings decreased by 16%.
- Based on the estimated cost of a central venous dressing change being \$32.70 this would result in a cost savings of approximately \$40,000 per year.

Quality Improvement Initiative Results in Fewer Dressing Disruptions and Improved Adherence to Best Practices [\[View Poster\]](#)

Browne, B. and Moffo, H. Mercy Health / The Jewish Hospital, OH, Poster Presentation at Greater Cincinnati AACN Trends in Critical Care, 2016

- At three separate survey points after the CVC procedure was modified to include Mastisol, 0% of dressings were non-adherent.
- When Mastisol was implemented, frequency of dressing changes decreased from 2X to 1X per week.
- CLABSI rates were reduced by 76% by the 3rd post-intervention survey (From 2.9 to 0.7 per 1000 device days)
- Concluded that reducing dressing disruption should be part of a comprehensive care bundle to reduce CLABSI in high risk patients.

Impact of Implementing Mastisol in Central Line Dressing Changes on Central Line Associated Blood Stream Infections in Progressing Care Units: A Quality Improvement Project

[\[View Poster\]](#)

Bortz et al. The University of Kansas, KS, Presented at the Magnetizing KC Symposium, 2015.

- CLABSIs decreased after Mastisol was implemented (from one CLABSI pre-implementation to zero post-implementation).
- Financial analysis indicates that if just one CLABSI was prevented over the course of the year, the cost of Mastisol and Detachol for one unit would be covered, plus additional savings.

Improving Adhesion of Internal Jugular Dressings in the Intensive Care Unit [\[View Poster\]](#)

Niehaus, S. and McCord J. Bethesda North Hospital, OH, Poster Presentation at the Association for Vascular Access Annual Scientific Meeting, 2016.

- Determined the effect of Mastisol on the adherence of internal jugular (IJ) CVC dressings.
- 76% more dressings were dry and intact after the intervention vs before the intervention.
- 61% of dressings were changed due to compromised status before the intervention vs 13% after the intervention.

Nursing Survey Reviews Novel Strategy in Assisting Adherence to Best Practices of CVC Dressing Management [\[View Poster\]](#)

Deneau, J. and Craig A., Cookeville Regional Medical Center, FL, Poster Presentation at Institute for Healthcare Improvement National Forum, 2013.

- Evaluated effectiveness of Mastisol for enhancing CVC dressing securement and preventing detachment.
- With Mastisol use, fewer dressings were compromised prior to 7 days.
- Fewer dressings compromised due to mechanical forces.
- Fewer dressings compromised due to excess moisture.
- Nursing staff noted less damage to patients' skin while productivity was maintained.
- Adding products to central line dressing kits helped increase compliance.

Ventriculostomy Dressing Process Improvement [\[View Poster\]](#)

Boudreaux, A. Vanderbilt University Medical Center, TN, Poster Presented at National Teaching Institute & Critical Care Exposition, 2013.

- After Mastisol was implemented, EVD-related meningitis rates decreased from 4.3 per 1000 device days to 0.3 per 1000 device days.
- The unit experienced 355 days (almost an entire year) without an EVD-related meningitis case.
- Staff reported increased satisfaction with the new process.

Mastisol Clinical Evidence & Resources website:

<https://www.eloquesthealthcare.com/mastisol/resources/>