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Interrupted subdermal suture spacing during linear wound closures and the effect on wound cosmesis: a randomized evaluator blinded split wound comparative effectiveness trial
Date: December 14, 2017

1) Protocol Title

Interrupted subdermal suture spacing during linear wound closures and the effect on wound cosmesis: a randomized evaluator blinded split wound comparative effectiveness trial

2) Author of Protocol

X UC Davis Researcher
☐ Researcher from other institution
☐ Private Sponsor
☐ Cooperative Group
☐ Other: _____

3) IRB Review History

N/A

4) Objectives

The purpose of this study is to determine whether the spacing between subdermal interrupted sutures during repair of linear cutaneous surgery wounds on the trunk or extremities affects scar cosmesis. We will use a split wound model, where half of the wound is repaired with sutures spaced two centimeters apart and the other half is repaired with sutures spaced one centimeter apart. Three-months post-surgery, the scar will be measured via the patient observer scar assessment scale, a validated scar instrument. The scar width, and adverse events will also be recorded.

5) Background

Sutures are the standard of care in repairing cutaneous wounds. The majority of surgical reconstructions following a Mohs micrographic surgery and standard surgical excisions require two layers of sutures: a deep layer and a top layer. The deep layer dissolves naturally whereas the top layer must be removed.

This study aims to investigate whether the spacing of the interrupted deep (subdermal) sutures affects surgical wound cosmesis on the trunk and extremities. In other words, we would like to determine which of the following yields a more cosmetically appealing scar: many closely approximated subdermal sutures or fewer, more widely spaced subdermal sutures. We wish to compare the effects of one versus two centimeter spacing between sutures. It is possible that fewer, more widely spaced sutures may leave more open space in the wound, leaving more tension to pull on those few sutures, possibly encouraging the wound to dehisce and make it harder to approximate the wound edges yielding a less

cosmetically appealing scar compared to placing many closely approximated sutures which would decrease the tension and likely better approximate the wound edges yielding a more cosmetically appealing scar. On the other hand, we may find that suture spacing has no effect on wound cosmesis and that placing fewer, more widely spaced sutures is much more time efficient. We may also find that the effect of suture spacing on wound cosmesis is dependent on wound tension. For example, perhaps the suture pacing would have no effect on the cosmesis of a wound under no tension, however, for a wound under high tension, it is possible that many closely approximated sutures would yield better cosmetic results for the reasons listed above.

After completing a thorough literature search, there appears to be no data, recommendations, or studies published on the affect of subdermal suture spacing on wound cosmesis.

6) Inclusion and Exclusion Criteria

Describe how your individuals will be screened for eligibility.

All patients scheduled for cutaneous surgical procedures with one of the study investigators at the UC Davis Dermatology Clinic will be screened for eligibility.

Describe the criteria that define who will be included or excluded in your final study sample.

Inclusion Criteria:

- 18 years of age or older
- Able to give informed consent themselves
- Patient scheduled for cutaneous surgical procedure on the trunk and extremities with predicted primary closure
- Willing to return for follow up visit.

Exclusion Criteria:

- Mentally handicapped
- Unable to understand written and oral English
- Incarceration
- Under 18 years of age
- Pregnant Women
- Wounds with predicted closure length less than 4 cm

Indicate specifically whether you will include or exclude each of the following special populations: (You may not include members of the above populations as subjects in your research unless you indicate this in your inclusion criteria.)

- *Adults unable to consent*
- *Individuals who are not yet adults (infants, children, teenagers)*
- *Pregnant women*
- *Prisoners*

None of these special populations will be included

7) Number of Subjects

a) Study- Wide:

This is a single center study; see below.

b) Local:

Indicate the total number of subjects to be enrolled locally.

We will enroll 50 patients locally in this single center study.

8) Recruitment Methods

a) Study-Wide:

NA

Describe when, where, and how potential subjects will be recruited.

Patients will be recruited from the investigators surgical practice at the time of the procedure at the University of California, Dermatology Clinic

Describe the methods that will be used to identify potential subjects.

The surgical schedule will be examined to identify potential study subjects. Faculty will be reminded about the study through a flier posted in the doctors charting lounges (Attached).

Describe materials that will be used to recruit subjects. (Attach copies of these documents with the application. For advertisements, attach the final copy of printed advertisements. When advertisements are taped for broadcast, attach the final audio/video tape. You may submit the wording of the advertisement prior to taping to preclude re-taping because of inappropriate wording, provided the IRB reviews the final audio/video tape.)

b) HIPAA:

If the research procedures include accessing personal health information (PHI) to identify prospective subjects without HIPAA Authorization please describe:

- *Why getting HIPAA Authorization is not practicable.*
- *Why the research can't be conducted without access to this PHI.*
- *Your plan to protect the PHI from improper use and disclosure, including the plan to destroy the PHI at the earliest opportunity.*
- *Assurance that the protected health information will not be inappropriately reused or disclosed to any other person or entity.*
- *Description of the protected health information which will be accessed*

The patients name, age, gender, medical record number, operative and follow up images and phone number will be recorded in the Redcap data system to allow study personnel to contact patients to arrange their follow up visits. Information will be deleted from the redcap system after 3 years. HIPPA authorization will be obtained from each patient.

9) Compensation to the Subjects

If the subjects will be compensated for their participation within the study describe the amount and type of compensation that will be paid to subjects. Clarify how compensation will be pro-rated if the subjects does not complete all study visits.

No compensation provided to study subjects.

10) Study Timelines

Describe:

- *The duration of an individual subject's participation in the study.*

3 months

- *The duration anticipated to enroll all study subjects.*

3 months

- *The estimated date for the investigators to complete this study (complete primary analyses)*

12 months

11) Study Endpoints

Describe the primary and secondary study endpoints.

The primary endpoint will be the score of two blinded reviewers using the patient observer scar assessment score at a three-month assessment visit.

The secondary endpoints will include the width of the scar 1 cm from midline on each side at the follow-up visit and any complications from the treatment.

Describe any primary or secondary safety endpoints.

Cutaneous surgery is a very low risk procedure. No deaths have ever been observed in our department, minor infections occur at rates of < 3% and bleeding and dehiscence at much lower rates still. All adverse events will be recorded, and monitored. Serious adverse events will be reported, though none are expected.

12) Procedures Involved

a) Describe and explain the study design.

This is a single center, randomized, evaluator blind, split wound study.

Provide a description of all research procedures being performed and when they are performed, including procedures being performed to monitor subjects for safety or minimize risks.

After screening and informed consent, demographic data will be collected including date of birth, race, gender and medical record number. This will be collected in the redcap database.

The patient's wound will be labeled A if it is on the left or superior side of the investigator and B if it is on the right or inferior side. A predetermined, concealed randomization number will be obtained from the RedCap randomization module, which will specify how side A is to be treated. Side B will be treated the opposite way as A. Side A will always be closed first. The side assigned to be closed with sutures spaced two centimeters apart will be treated in a simple, interrupted subdermal pattern. Sutures spaced one centimeter apart will be used to treat the opposite side in a simple, interrupted subdermal pattern. After placement of the deep stitches, both sides of the wound will be sewn together with a top layer of stitches, as is the standard of care. A digital image of the wound before and after the top stitches are placed will be obtained; these may be used in scientific talks and/or for publication purposes. Treatment assignment, wound length, demographic data, and digital images will be recorded within the redcap database.

Follow-up assessment will be scheduled for three months following the procedure, with a one-month window before or after that time if the patient cannot return at precisely three months.

At the follow-up visit, two blinded observers will record their scores independently using the physician observer scar assessment score instrument (POSAS). The width of the scar on both sides will also be measured and recorded 1 cm from midline on both sides of the scar. If one half of the scar has more associated erythema, that will be recorded. The patient part of the instrument will be independently recorded. This data will be recorded in the redcap database. Digital images will then be obtained again, which may be used for scientific meeting presentation and/or publication purposes.

Describe:

- *Procedures performed to lessen the probability or magnitude of risks.*

All adverse events will be monitored and recorded. Safety precautions will be the same as for all patients undergoing cutaneous procedures. Patients will be given instructions to call in the event of any complications such as bleeding, infection, pain or any concerns. An on call resident will be available by phone at all hours, every day of the week. Instructions for contacting the on call resident will be given in written form as well.

- *All drugs and devices used in the research and the purpose of their use, and their regulatory approval status.*

The type of suture device used on the deep portion of the wound will be at the discretion of the investigator. The type used will be either vicryl, monocryl, or PDS as these are all standard of care.

- *The source records that will be used to collect data about subjects. (Attach all surveys, scripts, and data collection forms.)*

We will collect all data, demographic and scientific, in the redcap data collection system. The patient will be queried for demographic data verbally or the patient chart will be examined within the EMR to obtain the date of birth, race, gender, date of surgery, date of follow-up, name, medical record number, and surgery location. All other data will be recorded from assessments during study evaluation.

- *What data will be collected including long-term follow-up.*

POSAS scores, width of the scar 1 cm from midline on each side, digital images, occurrence of any complications including: spitting sutures, dehiscence, infection, necrosis, bleeding, and hematoma.

- *Describe how much blood is being drawn and how often*

NA

b) Humanitarian Use Device (HUD)

For HUD uses provide a description of the device, a summary of how you propose to use the device, including a description of any screening procedures, the HUD procedure, and any patient follow-up visits, tests or procedures.

NA

13) Data and Specimen Banking

If data or specimens will be banked for future use, describe where the specimens will be stored, how long they will be stored, how the specimens will be accessed, and who will have access to the specimens.

NA

List the data to be stored or associated with each specimen.

NA

Describe the procedures to release data or specimens, including: the process to request a release, approvals required for release, who can obtain data or specimens, and the data to be provided with specimens.

NA

14) Data Management and Confidentiality

Describe the data analysis plan, including any statistical procedures.

Paired t-test will be performed for POSAS scores and scar width. For analysis of complications Fisher's exact test will be used.

Provide a power analysis.

Using g*power statistical software, we calculated we would need to enroll 50 patients using a split scar model with a mean POSAS score of 12 a minimal meaningful clinical difference of 3 points on the 60 point POSAS scale with the following assumptions: alpha 0.05, beta 0.10, standard deviation 6 (based upon wound eversion study results from trial completed by us last year), dropout rate 15%.

Describe the steps that will be taken secure the data (e.g., training, authorization of access, password protection, encryption, physical

controls, certificates of confidentiality, and separation of identifiers and data) during storage, use, and transmission.

Redcap database will be used to record all data. It is maintained by the University of California, Davis and encrypted. Passwords for access will not be shared. For analysis, data will only be downloaded without personal identifiers.

Describe any procedures that will be used for quality control of collected data.

Questions in the data collection forms will have warning text that will appear if users attempt to close them without recording the required data.

a.) Study-Wide:

Describe how data and specimens will be handled study-wide:

NA. Study is single center only.

- *What information will be included in that data or associated with the specimens?*
- *Where and how data or specimens will be stored?*
- *How long the data or specimens will be stored?*
- *Who will have access to the data or specimens?*
- *Who is responsible for receipt or transmission of the data or specimens?*
- *How data and specimens will be transported?*

b.) Local

Describe the local procedures for maintenance of confidentiality.

- *Where and how data or specimens will be stored locally?*

Consent forms will be stored in a locked cabinet. All other study related information will be recorded in the redcap data system.

- *How long the data or specimens will be stored locally?*

3 years.

- *Who will have access to the data or specimens locally?*

Only those listed in the study protocol. A statistician will view de-identified data after collection for analysis purposes.

- *Who is responsible for receipt or transmission of the data or specimens locally?*

The principal investigator; Daniel Eisen

- *How data and specimens will be transported locally?*

Data will only be downloaded onto encrypted computers directly from the redcap database and only when necessary for study administration or data analysis.

15) Provisions to Monitor the Data to Ensure the Safety of Subjects

This is required when research involves more than Minimal Risk to subjects.

The plan might include establishing a data monitoring committee and a plan for reporting data monitoring committee findings to the IRB and the sponsor.

Describe:

- *The plan to periodically evaluate the data collected regarding both harms and benefits to determine whether subjects remain safe.*

Risks from this study are minimal. All adverse events will be monitored and recorded. Study personnel will immediately share all adverse events with the principal investigator.

- *What data are reviewed, including safety data, untoward events, and efficacy data.*

Only safety data will be reviewed. Efficacy data will be determined after study follow up is completed since this study concerns non-life threatening outcomes.

- *How the safety information will be collected (e.g., with case report forms, at study visits, by telephone calls with participants).*

Safety information will be collected within the redcap database.

- *The frequency of data collection, including when safety data collection starts.*

Safety data collection begins immediately following the procedure. Patients will be instructed to call immediately with any complications from their procedures. Patients will also be queried at follow up (3

months) regarding complications in case they fail to call and are treated by an outside physician.

- *Who will review the data.*

The principal investigator and study personnel will review the data.

- *The frequency or periodicity of review of cumulative data.*

The study investigator will review safety data weekly after enrollment.

- *The statistical tests for analyzing the safety data to determine whether harm is occurring.*

Both interventions in this study are relatively low risk and have been used in surgery for decades. Serious adverse events are not expected. Typically if one occurs it affects both sides of the wound in the form of infection, bleeding, or dehiscence. If the adverse event is localizable to a single site it will be recorded as such and the results analyzed after study completion.

- *Any conditions that trigger an immediate suspension of the research.*

Any serious complication, such as hospital admission for treatment related to the procedure will trigger cessation of recruitment, until study personnel meet and determine it is safe to continue enrolling patients.

16) Withdrawal of Subjects

Describe anticipated circumstances under which subjects will be withdrawn from the research without their consent.

None

Describe any procedures for orderly termination.

For subjects that do not want to continue to participate in the study, then they may do so by informing us by phone or in person or by email. There is no risk to early study termination.

Describe procedures that will be followed when subjects withdraw from the research, including partial withdrawal from procedures with continued data collection.

If patients change their mind about participation prior to or during their procedure the surgeon will use his or her judgment with regarding the spacing of the dermal sutures to close the deep layer of skin. No data collection will occur in the future.

17) Risks to Subjects

List the reasonably foreseeable risks, discomforts, hazards, or inconveniences to the subjects related the subjects' participation in the research. Include as may be useful for the IRB's consideration, describe the probability, magnitude, duration, and reversibility of the risks. Consider physical, psychological, social, legal, and economic risks.

The primary risk of participating is that one side of the wound may look different than the other. The author has thus far conducted 5 split scar studies and none of the participants from these trials has requested revision of the scar based upon differences in appearance of the two halves. Typically, differences are not extreme in individuals. Other risks are the same for every cutaneous surgical procedure regardless of study enrollment: infection, bleeding, dehiscence, 100% chance of scar. Risks of bleeding and infection are less than 3% in our facility and typically minor in nature.

If applicable, indicate which procedures may have risks to the subjects that are currently unforeseeable.

The study intervention is commonly performed. Though unforeseeable risks are always possible, they are not probable here.

If applicable, indicate which procedures may have risks to an embryo or fetus should the subject be or become pregnant.

NA

If applicable, describe risks to others who are not subjects.

NA

18) Potential Benefits to Subjects

Describe the potential benefits that individual subjects may experience from taking part in the research. Include as may be useful for the IRB's consideration, the probability, magnitude, and duration of the potential benefits.

Indicate if there is no direct benefit. Do not include benefits to society or others.

No direct benefit to individual subjects.

19) Vulnerable Populations

If the research involves individuals who are vulnerable to coercion or undue influence, describe additional safeguards included to protect their rights and welfare.

NA

20) Multi-Site Research

NA

21) Community-Based Participatory Research

NA

22) Sharing of Results with Subjects

Results of the study participants own outcome measurements will be shared with patient verbally if they request.

23) Setting

Patients will be recruited from the University of California, , Dermatology Clinic cutaneous surgery practice, 3301 C St, #1300, Sacramento, CA 95816.

Research procedures will be performed at the University of California, Davis Department of Dermatology cutaneous surgery practice. 3301 C St, #1400, Sacramento, CA 95816.

24) Resources Available

Principle Investigator- Board Certified Dermatologist with fellowship training in cutaneous surgery. Will recruit, enroll, evaluate study subjects and oversee study.

Co-Investigator- Procedural Dermatology Fellow: will recruit, enroll, and evaluate study subjects.

Board certified dermatologists with fellowship training in cutaneous surgery: will recruit, enroll, and evaluate study subjects.

Board certified dermatologists: will recruit, enroll, and evaluate study subjects.

Dermatology residents: will recruit, enroll, and evaluate study subjects.

Study coordinator: will correspond with IRB, perform audits of consent forms, and handle administrative requirements of study

Junior Specialist: will correspond with IRB and handle administrative requirements of study

Patient Record Abstractor: perform research study maintenance in Epic and scanning consent forms to Epic.

Approximately 30 patients undergo cutaneous surgeries every week in our center. We should easily be able to recruit our required number within 3 months.

The principle investigator and procedural dermatology fellow will recruit and treat patients continuously five days a week.

Outpatient, dermatologic surgery facility with 6 procedure rooms, and more than a dozen nursing staff.

No psychological support is likely necessary for those undergoing the procedure. Medical help is available in the event of a complication from 7:30 AM- 5 PM Monday-Friday. An on call resident is available for all times the clinic is not available and patients may also visit the Emergency Department.

A pre-enrollment meeting will occur where the protocol is carefully explained. We will print algorithms for study personnel. They may additionally refer to redcap database where the questions will guide them through data capture and the procedure. We will also have a lab practicing the procedure on a simulated patient mannequin designed for teaching cutaneous surgical procedures.

25) Prior Approvals

NA

26) Provisions to Protect the Privacy Interests of Subjects

Only study personnel and nurses normally present during cutaneous procedures and follow-ups will be present. Personal information will be obtained just once at study recruitment. It will not be required at follow up.

Examination of the wound will not differ significantly in practice from standard medical care, during which a faculty member and resident and nurse typically participate in the patients care. In this situation, the number of interactions will be the same or less, since only two study investigators will be required. Medical students will not participate in study patient follow-up evaluation.

Indicate how the research team is permitted to access any sources of information about the subjects.

Access to study information will be permitted only for data entry and for study monitoring. Study staff will be requested to only access this information for these purposes only.

27) Compensation for Research-Related Injury

If the research involves more than Minimal Risk to subjects, describe the available compensation in the event of research related injury.

No compensation will be provided.

Economic Burden to Subjects

No additional cost to participate in the study will be incurred. *Standard of care and other routine costs will be billed to the patient or the patient's insurance carrier, Medicare, or Medi-cal, where appropriate. Only the costs of research and experimental procedures will be paid by the sponsor/department*

28) Consent Process

We will obtain written informed consent from all subjects. Study personnel will be obtaining consent in person at the Dermatology clinic at 3301 C St, #1300, Sacramento, CA 95816. Patients will be given as much time as they like to consider enrolling.

We will review the consent form binder once a month to ascertain signatures on the consent and HIPAA forms. The study coordinator, Lam Nguyen will review the binder independently at routine intervals.

Our experience from past studies indicates it takes less than 5 minutes to explain the study. The subject will be allowed to take as much time as they like to read the forms, ask questions or consider participation.

We will inform the subject that enrollment is optional and that we will treat them without bias and with all the quality that they should normally expect outside of study participation.

Subjects will be asked if they understand the study and if they have any questions.

We will not enroll anyone who does not understand written or verbal English. The vast majority of our cutaneous surgical population is English speaking.

Waiver or Alteration of the Consent Process (consent will not be obtained, required information will not be disclosed, or the research involves deception)

NA

Subjects who are not yet adults (infants, children, teenagers)

NA

Cognitively Impaired Adults

NA

Adults Unable to Consent

NA

Adults Unable to Consent

NA

For HUD uses provide a description of how the patient will be informed of the potential risks and benefits of the HUD and any procedures associated with its use.

29) Process to Document Consent in Writing

We will follow *"SOP: Written Documentation of Consent (HRP-091)"*

30) Drugs or Devices

NA

References

After completing a literature search, it has been determined that there are no publications, recommendations, or studies invetigating the relationship between interrupted subdermal suture spacing and wound cosmesis.