Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial.

Hernia-Prophylaxis in Acute Care Surgery
H-PACS

Study protocol

Study Type: Prospective randomised controlled trial for prophylactic intraperitoneal mesh implantation (Strattice®, Lifecell) in patients undergoing emergency laparotomy

Risk Categorisation: ClinO risk cat A

Study Registration: KEK-BE: 2016-02212

Principal investigator/sponsor: Prof. Dr. med. Guido Beldi
Universitätsklinik für Viszerale Chirurgie und Medizin
Inselspital, Universitätsspital Bern
Schweiz

Investigational Product: Strattice, Lifecell

Health condition / problem Incisional hernia

Project Duration March 2017 until September 2020

Project Plan Version and Date: Version 3.0 06.03.2017

ACCESS TO RESEARCH DOCUMENTS
Is limited to investigators and is not in conflict with applicable transparency rules.
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

SIGNATURE PAGE(S)

Project Title

Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial.

The principal investigator and investigator have approved the research plan version 3.0 dated 06.03.2017, and confirm hereby to conduct the project according to the plan, the current version of the World Medical Association Declaration of Helsinki, the principle of good clinical practice and the local legally applicable requirements.

Principle investigator:
Prof. Dr. med. Guido Beldi

Place/Date
Signature

Investigator:
Dr. med. Manuel Jakob

Place/Date
Signature
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

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1. SYNOPSIS (ZUSAMMENFASSUNG)

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<tr>
<th>Studienleiter</th>
<th>Prof. Dr. med. Guido Beldi</th>
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<tbody>
<tr>
<td></td>
<td>Universitätssklinik für Viszerale Chirurgie und Medizin</td>
</tr>
<tr>
<td></td>
<td>Inselspital, Universitätsspital Bern</td>
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<td>Schweiz</td>
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<table>
<thead>
<tr>
<th>Projekttitle:</th>
<th>Prophylaktische Netzimplantation bei Patienten mit Notfalllaparotomie zur Verhinderung von Narbenhernien: Eine randomisiert kontrollierte Studie</th>
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<tr>
<th>Abkürzung:</th>
<th>H-PACS trial</th>
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<tr>
<th>Version, Datum:</th>
<th>Version 3.0, 06.03.2017</th>
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<th>Studienregistration:</th>
<th>KEK-BE: 2016-02212</th>
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<table>
<thead>
<tr>
<th>Risikokategorie:</th>
<th>KlinV Kategorie A</th>
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<tr>
<th>Art der Studie:</th>
<th>Prospektiv randomisiert kontrollierte klinische Studie</th>
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| Hintergrund:           | Narbenhernien sind eine häufige Komplikation nach viszeralchirurgischen Eingriffen und deren Inzidenz variiert zwischen 11 und 26% bei Patienten nach Allgemeinchirurgie. Insbesondere Patienten, die sich einer Notfallopertion unterziehen müssen haben zusätzlich erhöhtes Risiko für eine Narbenhernie oder einen Platzbauch, welcher die akute Form einer Fasziendehiszenz darstellt. Die Inzidenz der Narbenhernie bei notfallmäßigen Laparotomien variiert zwischen 33-54% [1, 2]. Narbenhernien sind mit hoher Morbidität wie Darminkarzeration, chronisches Unwohlsein, Schmerzen, und Reoperationen assoziiert und typischerweise muss ein synthetisches Netz bei einer zweiten späteren Operation eingelegt werden [3, 4]. Die Inzidenz des Platzbauches wird in bis 24.1% der Fälle beobachtet und ist mit einer Mortalität von bis zu 44% assoziiert [5,6]. Der Goldstandard des Abdominalverschlusses während elektiven und notfallmäßigen Operationen ist die fortlaufende einreißige absorbierbare Naht [7]. Im Rahmen einer früheren Studie zeigte sich, dass die prophylaktische Netzimplantation bei elektiven Operationen mit einem erhöhten Risiko die Rate an Narbenhernien signifikant reduziert [8]. In retrospektiven Serien wurde gezeigt, dass die Netzimplantation bei notfallmäßigen Operationen oder beim kontaminierten Abdomen sicher ist [9-13]. In der vorliegenden Studie wird mittels einer prospektiv randomisierten Studie evaluiert, ob die prophylaktische Netzimplantation bei Patienten mit Notfalloperationen die Inzidenz von Narbenhernien reduziert. |
Ziele:


Endpunkte:

<table>
<thead>
<tr>
<th>Primärer Endpunkt</th>
<th>Inzidenz von Tod oder Hernie bis 18 Monate postoperativ (hernia-freesurvival)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sekundäre Ziele</td>
<td>Postoperativer Platzbauch 30 Tage postoperativ</td>
</tr>
<tr>
<td></td>
<td>Mortalität 90 Tage postoperativ</td>
</tr>
<tr>
<td></td>
<td>Wundinfektion 30 Tage postoperativ</td>
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<td></td>
<td>Darmfistel 30 Tage postoperativ</td>
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<tr>
<td></td>
<td>Dünndarmobstruktion nach 6 Monaten, 12 Monaten, 18 Monaten</td>
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<tr>
<td></td>
<td>Postoperative Schmerzen nach 6 Monaten, 12 Monaten, 18 Monaten</td>
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<tr>
<td></td>
<td>Netzinfection nach 6 Monaten, 12 Monaten, 18 Monaten</td>
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<tr>
<td></td>
<td>Netzexplantation nach 6 Monaten, 12 Monaten, 18 Monaten</td>
</tr>
</tbody>
</table>

Einschluss-/Ausschlusskriterien:

<table>
<thead>
<tr>
<th>Einschlusskriterien:</th>
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<tbody>
<tr>
<td>Patienten, die eine notfallmässige mediane Laparotomie benötigen</td>
</tr>
<tr>
<td>Notfallmässige Laparoskopie mit hoher Wahrscheinlichkeit für eine Konversion zur medianen Laparotomie</td>
</tr>
<tr>
<td>Patientinnen / Patientenälter 18 Jahre</td>
</tr>
<tr>
<td>Unterschriebener informed consent</td>
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<thead>
<tr>
<th>Ausschlusskriterien:</th>
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<tbody>
<tr>
<td>ASA Score ≥ 5</td>
</tr>
<tr>
<td>Septischer Schock</td>
</tr>
<tr>
<td>Schwangerschaft</td>
</tr>
<tr>
<td>Vorgängige abdominelle Netzimplantation</td>
</tr>
<tr>
<td>Überempfindlichkeit gegen porzines Material oder Polysorbat 20</td>
</tr>
</tbody>
</table>
**Untersuchungen:**

**Intervention:**

**Kontrolle:**
Die Hauptoperation wird wie geplant durchgeführt. Abdominalverschluss wird in standardisierter Form mit einem PDS 1 Schlingenfaden durchgeführt. Die Distanz zum Faszieende ist jeweils 1 cm und die Distanz zwischen zwei Stichen ist nicht mehr als 1 cm. Die gesamte Fadenlänge ist mindestens 4x der Länge der Inzision. Hautverschluss erfolgt mit einfachen Stichen in einem Abstand von mindestens 2 cm.

**Anzahl Teilnehmer:**
118 Patienten

**Projektdauer:**
Studiendauer 4 Jahre
- Bewilligung der Ethikkommission: Februar 2016
- Start der Studie: 1. März 2017
- Einschluss letzter Patient: September 2018
- Datenbank beendet/Follow-up des letzten Patienten: April 2020
- Statistische Analyse: Mai 2020
- Schreiben des Manuskripts: Juli 2020
- Publikation September 2020

**Investigators:**
Prof. Dr. Guido Beldi, Principle Investigator
Dr. med. Manuel Jakob, Investigator
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

| Studienzentrum:          | Universitätsklinik für Viszerale Chirurgie und Medizin
                          | Universitätsspital Bern, Bern, Schweiz |
|-------------------------|----------------------------------------------------------------------------------|
| Statistische Überlegungen: | Primärer Endpunkt  

Sekundäre Endpunkte  
- Binäre Endpunkte werden mittels Chi-Quadrat Test zwischen den Gruppen verglichen.
- Kontinuierliche Variablen wie Schmerzen werden mit ANOVA ausgewertet nach Bereinigung für Baseline-Charakteristika. Patienten, die nicht nachkontrolliert werden können, können von der Analyse ausgeschlossen werden. Für die fehlenden Werte werden wir zwei Analysen durchführen: 1) fehlende Werte werden durch das mean follow-up von vorhandenen Daten ersetzt, 2) als schlimmstes Szenario können die fehlenden Werte über den Maximum follow-up Wert von vorhandenen Daten ersetzt werden.
Risiko-Nutzen-Verhältnis/GCP-Statement:

Die Narbenhernie nach notfallmässiger Laparotomie ist ein häufiges klinisches Problem mit hoher Morbidität. Diese Studie könnte zeigen, ob die prophylaktische Netzimplantation die Inzidenz an Narbenhernien und Platzbauch senkt und ob diese mit Komplikationen wie chronischen Netzinfekten, Darmfisteln, oder Netzexplantation assoziiert ist. Läsionen von intraabdominellen Organen oder Darmfistel traten in bisherigen Serien traten nicht häufiger auf als bei Patienten ohne intraabdominelles Netz [14].

## SYNOPSIS (SUMMARY)

| **Project Leader (or Sponsor)** | Prof. Dr. med. Guido Beldi  
Department for Visceral Surgery and Medicine  
Bern University Hospital, University of Bern  
Switzerland |
<table>
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<tbody>
<tr>
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<td>Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial</td>
</tr>
<tr>
<td><strong>Short Title / Project ID:</strong></td>
<td>H-PACS trial</td>
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<tr>
<td><strong>Project Plan Version and Date:</strong></td>
<td>Version 3.0, 06.03.2016</td>
</tr>
<tr>
<td><strong>Trial registration:</strong></td>
<td>KEK-BE: 2016-02212</td>
</tr>
<tr>
<td><strong>Risk categorisation:</strong></td>
<td>ClinO category A</td>
</tr>
<tr>
<td><strong>Type of Research:</strong></td>
<td>Prospective randomised controlled clinical trial</td>
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</table>
| **Background and Rationale:** | Incisional hernia is a common complication in visceral surgery and varies between 11 and 26% in the general surgical population. Patients requiring emergency laparotomy are at high risk for the development of incisional hernia and fascial dehiscence. Among this population the incidence of incisional hernia in patients undergoing emergency surgery varies between 33-54% [1, 2]. Incisional hernias are associated with a high morbidity rate, such as intestinal incarceration, chronic discomfort, pain, and reoperation and typically require implantation of a synthetic mesh in a later second operation [3, 4]. Fascial dehiscence represents an acute form of dehiscence and has been observed in up to 24.1% and is associated with a mortality rate up to 44% [5, 6].  
The gold standard for abdominal wall closure during elective and emergency operations is a running slowly absorbable suture [7]. In the elective situation it has been shown that prophylactic mesh implantation in high risk patients reduced the incidence of incisional hernia significantly [8].  
We and others have shown that mesh implantation in patients undergoing emergency laparotomy or in contaminated abdominal cavities are safe [9-13].  
With a randomized controlled trial we now aim to compare the incidence of incisional hernia after prophylactic mesh implantation versus standard of care in patients requiring emergency laparotomy. |
### Objective(s):

Aim of this study is to assess if prophylactic mesh implantation reduces the incidence of incisional hernia in patients undergoing emergency laparotomy. Therefore a prospective randomized trial will be performed in which prophylactic mesh implantation will be compared with single running suture of the abdominal fascia, which represents the current gold standard.

### Endpoint(s):

**Primary outcome:**

- Incidence of death or hernia up to 18 months (hernia-free survival)

**Secondary outcomes:**

- Postoperative fascial dehiscence at 30 days postoperative
- Mortality at 90 days postoperative
- Surgical site infection at 30 days postoperative
- Intestinal fistula at 30 days postoperative
- Small bowel obstruction at 6 months, 12 months, 18 months
- Postoperative pain at 6 months, 12 months, 18 months
- Mesh infection at 6 months, 12 months, 18 months
- Mesh explantation at 6 months, 12 months, 18 months

### Study design:

Prospective controlled, two armed, randomized study

### Inclusion / Exclusion criteria:

**Inclusion criteria:**

- Patients undergoing emergency midline laparotomy
- Emergency laparoscopy with expected conversion to midline laparotomy
- Male and female patients> 18 years
- Written informed consent

**Exclusion criteria:**

- ASA Score ≥ 5
- Septic shock
- Pregnant women
- Prior mesh implantation
- Known sensitivity for porcine material or Polysorbate 20

### Measurements and procedures:

Aim of this study is to prospectively compare the outcome of abdominal wall closure with a single running suture versus prophylactic intraperitoneal biologic mesh implantation in patients undergoing emergency laparotomy. The primary outcome parameter of this study is incidence of incisional hernia up to 18 months. Secondary outcome parameter include chronic mesh infection and intestinal fistula.
**Study Product / Intervention:**
The main operation will be performed as planned. Prior to the closure of the abdominal wall a mesh will be implanted in a standardized fashion: An acellular porcine dermal mesh *(Strattice®, Lifecell)* will be used. The mesh has a width of at least 15cm and is tailored to overlap lateral and cranial boarders at least 5cm. The mesh will be placed intra-abdominally and fixed using intra-abdominal stitches using Prolene 2/0 in all four corners. After the initial fixation of the mesh in all quadrants, the boarders of the mesh will be adapted using PDS 2/0 running sutures. The fixation aims to prevent any intestinal structures to herniate onto the mesh. Afterwards, the abdominal wall is closed as described in the control group. Skin closure will be performed using single stitches with gaps in between stitches of at least 2cm.

**Control Intervention (if applicable):**
The main operation will be performed as planned. For the closure of the abdominal wall, a standard technique will be applied using a running suture of PDS 1 loop. The distance of the sutures to the fascial border is 1cm and the distance between two stitches is not more than 1cm. The total length of suture is at least 4 times the total length of the abdominal incision. Skin closure will be performed using single stitches with gaps in between stitches of at least 2cm.

**Number of Participants:**
118 patients.

**Project Duration, schedule:**
Study duration 4 years
- Approval of the IRB: Februar 2016
- Start of the study: March 1st 2017
- Inclusion last patient: Sept 2018
- Database closure, follow-up of last patient: April 2020
- Statistical analysis: May 2020
- Study report: July 2020
- Publication: September 2020

**Investigator(s):**
Prof. Dr. Guido Beldi
Dr. med. Manuel Jakob

**Project Centre(s):**
Single center study
Department for Visceral Surgery and Medicine
Bern University Hospital, University of Bern
Switzerland
**Statistical Considerations:**

<table>
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<tr>
<th><strong>Primary outcome parameter</strong></th>
<th></th>
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<tbody>
<tr>
<td>Hernia-free survival will be analysed as time-to-event outcome. Patients lost to follow-up will be censored at the time of last contact. Kaplan-Meier plots will be used to visualize the incidence over time and a log Rank test will be used to compare the two groups. Cox regression will be used for secondary analyses and include important prognostic factors in the model. Significance is set at a two-sided level of 5%.</td>
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<thead>
<tr>
<th><strong>Secondary outcome parameter</strong></th>
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<tbody>
<tr>
<td>Binary outcome parameters will be compared between the two study groups using the chi-square test.</td>
<td></td>
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<tr>
<td>Continuous outcomes (pain) will be analysed using ANOVA with adjustment for baseline values. Patients lost to follow-up will be excluded from the analysis. To address missing values, we will perform two sensitivity analysis: 1) missing values will be replaced by the mean follow-up value from patients with available data and 2) a worst case scenario where missing values will be replaced by the maximum follow-up value from patients with available data.</td>
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</table>
## Risk-Benefit statement/GCP-Statement:

Incisional hernia after emergency laparotomy is a frequent clinical problem with high morbidity. This study may reveal that prophylactic mesh implantation reduces the incidence of incisional hernia and is not associated with chronic mesh-infection, intestinal fistula formation or mesh explantation.

When comparing patients with mesh implantation vs. no mesh implantation, no difference was found in terms of lesions to intraabdominal organs or intestinal fistula [14].

In contrast to Polypropylene-based meshes, which provide long term stability, biologic meshes slowly degrade. Side effects of mesh implantation after emergency laparotomy in our cohort were mainly chronic wound infections. Chronic wound infections might be contributed to the former used mesh material Polypropylene.

In contrast to biologic meshes, which will be studied in this trial, Polypropylene does not degrade in case of infection and this might lead to chronic wound infections.

These factors seem to justify examination of a biologic (slowly resorbable) mesh to prevent a frequent complication such as incisional hernia. This study will be conducted in compliance with the protocol, the current version of the Declaration of Helsinki, the ICH-GCP or ISO EN 14155 (as far as applicable) as well as all national legal and regulatory requirements.
2. ABBREVIATIONS

Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

AE  Adverse Event
CA  Competent Authority (e.g. Swissmedic)
CEC  Competent Ethics Committee
CRF  Case Report Form
ClinO  Ordinance on Clinical Trials in Human Research (in German: KlinV, in French: OClin)
eCRF  Electronic Case Report Form
CTCAE  Common terminology criteria for adverse events
DSUR  Development safety update report
GCP  Good Clinical Practice
Ho  Null hypothesis
H1  Alternative hypothesis
HFG  Humanforschungsgesetz (Law on human research)
HMG  Heilmittelgesetz
HRA  Federal Act on Research involving Human Beings
IMP  Investigational Medicinal Product
IIT  Investigator-initiated Trial
ISO  International Organisation for Standardisation
ITT  Intention to treat
KlinV  Verordnung über klinische Versuche in der Humanforschung (in English: ClinO, in French: OClin)
LPTh  Loi sur les produits thérapeutiques
LRH  Loi fédérale relative à la recherche sur l'être humain
MD  Medical Device
OClin  Ordonnance sur les essais cliniques dans le cadre de la recherche sur l'être humain (in German: KlinV, in English: ClinO)
PI  Principal Investigator
SDV  Source Data Verification
SOP  Standard Operating Procedure
SPC  Summary of product characteristics
SUSAR  Suspected Unexpected Serious Adverse Reaction
TMF  Trial Master File
3. SCHEDULE OF ASSESSMENTS (FLOW OF RESEARCH PROJECT)

Patients undergoing emergency laparotomy

in-/exclusion

informed consent

Randomization

Mesh implantation

No mesh implantation

1. follow-up

6 weeks

2. follow-up

6 months

3. follow-up

12 months

4. follow-up

18 months
4. **ADMINISTRATIVE STRUCTURE**

4.1 **Sponsor, Sponsor-Investigator**

Prof. Dr. med. Guido Beldi  
Department of Visceral and Transplant Surgery  
Inselspital, University Hospital of Bern, Switzerland  
guido.beldi@insel.ch  
031/632 48 18

4.2 **Principal Investigator(s)**

Prof. Dr. med. Guido Beldi  
Department of Visceral and Transplant Surgery  
Inselspital, University Hospital of Bern, Switzerland  
guido.beldi@insel.ch  
031/632 48 18

4.3 **Any other relevant Committee, Person, Organisation, Institution**

Dr. med. Manuel Jakob  
Department of Visceral and Transplant Surgery  
Inselspital, University Hospital of Bern, Switzerland  
manuel.jakob@insel.ch  
079/228 57 25

LifeCell Corporation  
One Millenium Way  
Branchenburg  
NJ 08876  
USA
5. ETHICAL AND REGULATORY ASPECTS

5.1 Study registration

This study will be registered at clinicaltrials.gov.

5.2 Risk categorisation

According to article 20, ClinO – Categorisation of clinical trials of medical devices: this study is categorised as A.

We have attached the instructions for use and the conformity marking of the device used (Please see Attachment: ‘Medical Devices: Instructions for Use; Conformity marking’).

5.3 Competent Ethics Committee (CEC) and competent authorities

This study will be submitted for approval to the Competent Ethics Committee of the Kanton Bern (KEK).

All changes in the research activity and all unanticipated problems involving risks to humans; including in case of planned or premature study end and the final report will be reported to the ethics committee. No changes are made to the protocol without prior Sponsor and CEC approval, except where necessary to eliminate apparent immediate hazards to study participants.

Premature study end or interruption of the study is reported within 15 days. The regular end of the study is reported to the CEC within 90 days, the final study report shall be submitted within one year after study end. Amendments are reported according to chapter 2.10.

5.4 Ethical Conduct of Study

The study will be carried out in accordance to the protocol and with principles enunciated in the current version of the Declaration of Helsinki, the guidelines of Good Clinical Practice (GCP) issued by ICH, in case of medical device: the European Directive on medical devices 93/42/EEC and the ISO Norm 14155 and ISO 14971, the Swiss Law and Swiss regulatory authority’s requirements. The CEC and regulatory authorities will receive annual safety and interim reports and be informed about study stop/end in agreement with local requirements.
5.5 Declaration of interest

The PI and investigators declare: The study has financial support from LifeCell; but there is no obligations of the PI or the investigator to the company. There is no relationship with this organisation in the previous three years; no other relationships or activities have influenced this work.

5.6 Patient Information and Informed Consent

Participants will be informed about the study (what, how, by whom) and consent is sought from each participant at time an emergency surgery is planned.

The investigators will explain to each participant the nature of the study, its purpose, the procedures involved, the expected duration, the potential risks and benefits and any discomfort it may entail. Each participant will be informed that the participation in the study is voluntary and that he/she may withdraw from the study at any time and that withdrawal of consent will not affect his/her subsequent medical assistance and treatment.

The participant will be informed that his/her medical records may be examined by authorised individuals other than their treating physician. All participants for the study will be provided a participant information sheet and a consent form describing the study and providing sufficient information for participant to make an informed decision about their participation in the study. The participant should read and consider the statement before signing and dating the informed consent form, and should be given a copy of the signed document. The consent form must also be signed and dated by the investigator (or his designee) and it will be retained as part of the study records.

After a patient has agreed to enroll into the study and has signed written informed consent, he will be advised to attend follow-up assessments according to the study plan. All patients will undergo emergency surgery. The patient information sheet and the consent form was approved from the CEC.

Due to limited time of reflection, a second informed consent is sought as soon as possible after surgery. All patients will again receive information about the study, receive ample time to evaluate the written patient information form. This consent will allow use of data and continuation of the study.

However, some patients may not be able to sign informed consent. Therefore, enrolment into the study will be performed according to HFG Art. 30 and 31: (see below).

5.7 Enrollment of vulnerable patients

All patients will undergo emergency surgery. Some patients may not be able to sign informed consent (analgetic medication, sepsis, underlying disease). Therefore, enrolment into the study will be performed according to HFG Art. 30 and 31:

- Patients fit to decide will receive information and the preliminary patient information form, will be asked to participate to the study and to sign the corresponding consent form. For patients which
are not conscious, their legal representatives must receive the oral and written information, evaluate the putative will of the patient, fill in and sign the form for legal representatives.

- For every patient, an independent medical doctor will evaluate if the study conflicts with the patients best medical interests. He fills in and signs the form for independent doctors. The independent medical doctor is a senior physician in charge for the emergency department, Inselspital Bern. This personnel will be taught about the rationale of this research project accordingly. The following personnel will act as an independent doctor (Names): Lüthi Markus, Gutersohn Andreas, Häslar Stefanie, Macpherson Anja, Scheuber Ueli, Zwicker Felix, Bednarски Piotr, Betsch Belinda, Braun Christian, Eichenberger Susanne, Gimbel Martin, Griesshammer Ines, Gutschner Patrick, Hautz-Blaum Wolf, Hostettler-Blunier Simone, Huber Eliane, Jäggi-Moser Franziska, Klenk Laurence, Krummrey Gert, Lienert Jasmin, Nüesch Susanne, Paul Katrin, Sauter Thomas, Schwab Patrik, Steiner Roger, Thaler Julian Matthias, von Gradowski Markus, Ziegenhorn Stephan.

- As soon as possible after surgery these patients will receive information about the study, receive ample time to evaluate the written patient information form and will be ask to sign a second consent. This consent will allow use of data and continuation of the study.

- If the patient refuses to further participate into the study, the already collected security data will be used for the security of other patients. (see also HFG and respecting ordinances KlinV/OClinpara 7-9).

5.8 Participant privacy and confidentiality

All procedures along with information necessary to report the observations and tests described in this protocol will be recorded and as hard copy by the Department of Visceral Surgery and Medicine, Bern University Hospital. All data entered on the CRF must be documented in a source document with all the information on which the entries in the CRF are based being available in the patient files e.g. results of laboratory investigations. The case report form is not a source document. The clinical investigator is responsible for the identity of the data in the patient file and the correct entry of the data into the CRF. The investigator must review all pages within the CRF for accuracy and consistency with the protocol, and sign and date the CRF sign-off page(s) upon completion. The patient consent forms designated for the clinical investigator are also to be kept in the study documentation.

Original data are stored on REDCap Management system Inselspital Bern. A data back-up for the database is run daily. Authorized users have access to the database.

The investigator affirms and upholds the principle of the participant's right to privacy and shall comply with applicable privacy laws. Especially, anonymity of the participants shall be guaranteed when presenting the data at scientific meetings or publishing them in scientific journals.
Individual subject medical information obtained as a result of this study is considered confidential and disclosure to third parties is prohibited. Subject confidentiality will be further ensured by utilising subject identification code numbers to correspond to treatment data in the computer files.

For data verification purposes, authorized representatives of the Sponsor (-Investigator), the ethics committee may require direct access to parts of the medical records relevant to the study, including participants’ medical history.
5.9 Early termination of the study

The Sponsor-Investigator may terminate the study prematurely according to following circumstances:

1. ethical concerns
2. insufficient participant recruitment,
3. when the safety of the participants is doubtful or at risk, respectively,
4. alterations in accepted clinical practice that make the continuation of a clinical trial unwise,
5. early evidence of benefit or harm of the experimental intervention

If one of these circumstances is fulfilled, the primary investigator terminates the study and informs all involved parties.

Notification periods (according Art. 38 KlinV): after regular termination of the study, the CEC has to be informed within 90 days, after early termination within 15 days (with reasons for early termination).

5.10 Protocol amendments and changes

Under emergency circumstances, deviations from the protocol to protect the rights, safety and well-being of human subjects may proceed without prior approval of the CEC. Such deviations shall be documented and reported to the sponsor and the CEC as soon as possible.

Non-substantial amendments are communicated to the CEC within the Annual Safety Report (ASR).
6. INTRODUCTION

6.1 Background

An incisional hernia is defined as any abdominal wall gap with or without a bulge in the area of postoperative scar perceptible or palpable by clinical examination or imaging [15]. Incisional hernia is a common complication in visceral surgery and varies between 11 and 26% in the general surgical population. In patients undergoing emergency surgical such as therapy for secondary peritonitis, redo surgery because of complications associated with the abdominal wall, such as fascial dehiscence and surgical site infection are frequent. Impaired wound healing in response to the systemic inflammatory response and the high incidence of surgical site infection might render the abdominal wall even more susceptible for incisional hernia, compared with the general surgical population [16, 17]. Thus, patients requiring emergency laparotomy are at very high risk for the development of incisional hernia and fascial dehiscence. The incidence of incisional hernia in patients undergoing emergency surgery varies between 33-54% [1,2]. Incisional hernias are associated with a high morbidity rate, such as intestinal incarceration, chronic discomfort, pain, and reoperation and typically require implantation of a synthetic mesh in a later second operation [3, 4]. Fascial dehiscence has been observed in up to 24.1% and is associated with a mortality rate up to 44% [5, 6].

The gold standard of abdominal wall closure during elective and emergency operations is a running slowly absorbable suture [7]. In the elective situation it has been shown that prophylactic mesh implantation in high risk patients reduced the incidence of incisional hernia significantly [8].

Potential disadvantages of prophylactic mesh implantation are chronic mesh infection and intestinal fistula. Studies revealed that mesh implantation may be associated with complications such as intestinal fistula formation, chronic infection and mesh explantation[17]. We and others have shown that mesh implantation in patients undergoing emergency laparotomy or in contaminated abdominal cavities are safe [9-13].

However, there is no randomized controlled trial comparing mesh implantation in patients requiring emergency laparotomy.

Aim of this study is to prospectively compare the outcome of abdominal wall closure with a single running suture compared with prophylactic intraperitoneal biologic mesh implantation in patients undergoing emergency laparotomy. The primary outcome parameter of this study is incidence of incisional hernia up to 18 months. Secondary outcome parameter comprise in particular potential disadvantages of prophylactic mesh implantation such as chronic mesh infection and intestinal fistula.

6.2 Investigational Product (treatment, device) and Indication

Name of the medical device: Strattice® Reconstructive Tissue Matrix. The device for the current study concept is anacellular porcine dermal mesh (Strattice®, Lifecell). Manufacturer is: LifeCell Corporation,
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One Millenium Way, Branchenburg, NJ 08876, USA. Please find attached the manufacturer’s marking of conformity (Appendice 8).

The acellular porcine dermal mesh is intended for use as a soft tissue patch to reinforce soft tissue where weakness exists and for the surgical repair of damaged and ruptured soft tissue membranes including therapy of incisional hernia (Appendice 7). The surgeons implanting the planned mesh are being taught before usage according to the manufacturer instructions.

The investigational product will be labelled in English with the following: number of trial, patient’ number, marked as: “only for clinical trial”, name of the sponsor.

6.3 Clinical Evidence to Date

According to a systematic review of repairs for contaminated/infected complex incisional hernias with biologic mesh, mesh explantation was rarely necessary [19]. According to Itani et al., where 80 patients underwent ventral hernia repair with acellular porcine dermal mesh (Strattice®, Lifecell) in contaminated or infected abdominal cavities, the repair was successful in > 70% of patients after 24 months and no unanticipated adverse event occurred [20]. When comparing biologic mesh in ventral hernia repairs, Strattice® had the lowest odds of hernia recurrence compared to several other biologic meshes [21]. In a study where suture, synthetic, or biologic mesh in contaminated ventral hernia repair was compared, multivariate analysis showed a trend towards reduced occurrence of surgical site infections and hernia recurrence when a biologic mesh was used [22].

6.4 Dose Rationale / Medical Device: Rationale for the intended purpose in study (pre-market MD)

Incisional hernia after emergency laparotomy is a frequent clinical problem, which is associated with significant morbidity and costs. Prophylactic mesh implantation could reduce the incidence of incisional hernia after emergency laparotomy. Patients undergoing such procedures, however, are at risks for complications such as chronic mesh infection or intestinal fistulas. The Strattice Reconstructive Matrix Tissue® is derived from porcine skin and is strong and biocompatible. According to animal models it might have an increased resistance to infection [23]. Thus, the use of such bio-mesh potentially may justify a prophylactic procedure given the low incidence of mesh associated complications. The use of such bio-mesh potentially may justify a prophylactic procedure given the low incidence of mesh associated complications.

This study investigates if prophylactic mesh implantation may reduce the incidence of incisional hernia without associated complications such as chronic mesh-infection, intestinal fistula formation or mesh explantation. This is of particular interest for patients undergoing emergency laparotomy that represent a high-risk population. Furthermore, these patients are not only at risk to develop incisional hernia, but may also suffer from postoperative fascial dehiscence or chronic wound infection, which again may lead to
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incisional hernia. Thus, prophylactic mesh implantation may decrease mortality which is closely associated with fascial dehiscence.

The final goal of this study would be the introduction of a novel concept into daily clinical practice that allows the surgeon to minimize the still frequent complications of laparotomy in a population at high risk.

6.5 Explanation for choice of comparator (or placebo)

For the closure of the abdominal wall, a standard technique (Gold Standard) technique is used and accepted widely [24]. Up to now, prophylactic mesh implantation is mainly used in case series [25]. The European Hernia Society recommends prophylactic mesh augmentation in high-risk patients, like aortic aneurysm surgery and obese patients in the elective setting [26]. Standard closure of the abdominal wall will be applied using a running suture of PDS 1 loop. The distance of the sutures to the fascial border is 1cm and the distance between two stitches is not more than 1cm. The total length of suture is at least 4 times the total length of the abdominal incision. Skin closure will be performed using single stitches with gaps in between stitches of at least 2cm.

6.6 Risks / Benefits

Potential benefits of prophylactic mesh implantation

Complications associated with mesh implantation such as lesions to intraabdominal organs, chronic mesh infection or intestinal fistulas are potential risks in patients undergoing emergency laparotomy. The low incidence of these complications seems to justify a prophylactic procedure to prevent a frequent complication such as incisional hernia. Incisional hernia after emergency laparotomy is a frequent clinical problem, which is associated with significant morbidity. This study may reveal that prophylactic mesh implantation reduces the incidence of incisional hernia and is not associated with chronic mesh-infection, intestinal fistula formation or mesh explantation. Furthermore, prophylactic mesh implantation may prevent postoperative fascial dehiscence and the associated mortality.

Potential risks of prophylactic mesh implantation

Prophylactic mesh implantation is associated with increased operative time of 20 to 30 min. Our own findings suggest that in patients with surgical site infection, wound healing is delayed if the implanted mesh is exposed to the wound [27]. In some patients secondary debridements were indicated in order to remove exposed mesh from the surgical wound. Such observations were made mainly after the implantation of polypropylene based meshes. Similar it cannot be excluded that porcine meshes are also associated with delayed wound healing in patients with surgical site infection. Mesh fixation is done using fixation to the abdominal fascia using 2-0 sutures. In patients with incisional hernia repair local sutures are associated with prolonged pain up to six months [28].
6.7 Justification of choice of study population

Patients undergoing emergency laparotomy are at high risk developing incisional hernia. Incisional hernia is associated with an increasing morbidity and mortality. Retrospective studies revealed no difference of potential mesh complications such as mesh infection and intestinal fistula between patients receiving a mesh versus patients without mesh [29, 30]. This observation seems to justify to perform a prospective trial for patients undergoing emergency operations. This study may reveal that prophylactic mesh implantation reduces the incidence of incisional hernia in patients requiring emergency laparotomy and is not associated with chronic mesh-infection, intestinal fistula formation or mesh explantation.

For enrolment of vulnerable patients please see 2.7.

7. STUDY OBJECTIVES

7.1 Overall Objective

Aim of this study is to assess if prophylactic mesh implantation reduces the incidence of incisional hernia in patients undergoing emergency laparotomy. Therefore a prospective randomized trial will be performed in which prophylactic mesh implantation will be compared with single running suture of the abdominal fascia, which represents the current gold standard.

7.2 Primary Objective

The gold standard of abdominal wall closure during elective and emergency operations is a running slowly absorbable suture. In the elective situation it has been shown that prophylactic mesh implantation in high risk patients reduced the incidence of incisional hernia significantly. We and others have shown that mesh implantation in patients undergoing emergency laparotomy or in contaminated abdominal cavities is safe. Thus the aim of this study is to assess if prophylactic mesh implantation reduces the incidence of incisional hernia in patients undergoing emergency laparotomy.

7.3 Secondary Objectives / safety objectives

Secondary outcome parameter comprise in particular potential disadvantages of prophylactic mesh implantation such as chronic mesh infection and intestinal fistula.
8. STUDY DESIGN

8.1 General study design

This is a prospective randomised controlled trial.

Preoperative investigations

- Standardized interview with the assessment of demographic parameters and previous operations. Pregnancy will be excluded with a pregnancy test in every woman of reproductive age. During study period, contraception is mandatory for female patients.

Postoperative investigations

- Regular clinical investigation until discharge by the treating surgeon
- All patients receive a follow-up phone call 30 days after the operation to assess incidence of surgical site infections and other complications. This program is called Swissnoso and it is a highly standardized surveillance program in Switzerland monitoring postoperative wound infections. It is based on the National Nosocomial Infections Surveillance (NNIS) system of the USA. The patients are followed by a special educated nurse during hospitalization as well as 30 days after hospital discharge. (Find attached definitions of wound infections and the performed telephone interview, Appendix 9).
- Follow-up controls for the study will be performed at discharge, after 6 weeks, 6 months, 12 months and 18 months including clinical examinations, ultrasonography and laboratory tests by an investigator who is not involved in the medical care of the patients.
- At follow-up, patients undergo a standardized interview with the assessment of abdominal pain using the visual analog scale (0-10).
- If patients fail to appear to follow-up visitations, three documented attempts to contact the patients followed by rapid contacts with the subject’s general practitioner or other medical staff involved in the medical treatment of the patients, will be performed before lost of follow-up.

Definitions:

- Incisional hernia: Will be diagnosed primarily by clinical examinations and by ultrasonography. It has been shown that accuracy of incisional hernia is better using both techniques and that ultrasonography can detect more incisional hernias, which would not be found by clinical investigation itself [31].
- Postoperative fascial dehiscence: Disruption of the abdominal fascia requiring reoperative surgery or local treatment such as VAC.
- Mortality: death of a person.
- Surgical site infection: According to the criteria of Swissnoso (see Appendix 9).
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- Intestinal fistula: A tract leading from the lumen of the bowel to the exterior (skin, bladder).
- Small bowel obstruction: mechanical obstruction of the intestines, preventing the normal transit of the products of digestion requiring reoperation or insertion of a nasogastric tube and application of propulsive drugs.
- Postoperative pain: Pain requiring continuous medication objectified by the visual analog scale.
- Mesh infection assessed by clinical examination.
- Mesh explantation.
- Postoperative morbidity will be classified at discharge according to the Dindo-Clavien classification [32]. Grade I: complication is defined as any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiologic interventions. This grade also includes wound infections opened at the bedside. Grade II complication is defined by the requirement of pharmacologic treatment with drugs and includes blood transfusion and total parenteral nutrition. Grade III complication is defined by requirement of surgical, endoscopic, or radiologic intervention. Grade IV complication is defined by life-threatening complication including central nervous system complications requiring intermediate care or intensive care unit. Grade V is defined by death of a patient.

8.2 Methods of minimising bias

8.2.1 Randomisation

The randomization will be performed in 1:1 ratio between the investigational and the control arm. Randomization will be performed by computer-generated random number tables in permuted blocks of 10 patients considering patients above and below BMI 28 Kg/m2 to balance this strata in both groups. Allocation will be implemented directly in the electronic case report form. Only system administrators will have access to the list to ensure concealment of allocation.

8.2.2 Other methods of minimising bias

A standardized questionnaire will be used to reduce inter-observer variability. Additionally, to detect incisional hernia clinical exam and ultrasound will be used to augment detection rate of incisional hernia.

8.2.3 Blinding Procedures

No blinding can be performed.
9. STUDY POPULATION

9.1 Eligibility criteria

All patients undergoing emergency laparotomy are eligible for the study. After a patient has agreed to enroll into the study and has signed written informed consent, he will be advised to attend follow-up assessments according to the study plan.

All patients will undergo emergency surgery. Some patients may not be able to sign informed consent (analgetic medication, sepsis, underlying disease). Therefore, enrolment into the study will be performed according to HFG Art. 30 and 31 (see 6.7):

**Inclusion criteria**
- Patients undergoing emergency midline laparotomy
- Emergency laparoscopy with expected conversion to midline laparotomy
- Male and female patients > 18 years
- Written informed consent

**Exclusion criteria**
- ASA Score ≥ 5
- Septic shock
- Pregnant women
- Prior mesh implantation
- Sensitivity to porcine material or Polysorbat 20.

9.2 Recruitment and screening

Patients who are enrolled for an emergency laparotomy are eligible for the current study. This consist of patients presenting at the emergency department or already hospitalized patients. Medical personnel will be aware of the present study (especially the Department of Visceral surgery and Medicine) and screen eligible patients.

9.3 Criteria for withdrawal / discontinuation of participants

It leads to exclusion if participants withdraw their consent and their data will be anonymised after termination of data analysis. If participants are lost-to-follow up (not reachable/deceased) already collected data will be taken into analysis.
10. STUDY INTERVENTION

10.1 Identity of Investigational Products

10.1.1 Experimental Intervention (medicaldevice)

An acellular porcine dermal mesh (Strattice®, Lifecell) will be used. The mesh has a width of at least 15cm and is tailored to overlap lateral and cranial boarders at least 5cm. The mesh will be placed intra-abdominally and fixed using intra-abdominal stitches using Prolene 2/0 in all four corners. After the initial fixation of the mesh in all quadrants, the boarders of the mesh will be adapted using PDS 2/0 running sutures. The fixation aims to prevent any intestinal structures to herniate onto the mesh. Afterwards, the abdominal wall is closed as described in the control group. Skin closure will be performed using single stiches with gaps in between stiches of at least 2cm. Alternatively, the skin can be left open and treated with VAC. In case of staged laparotomy the experimental intervention is performed at the final operation.

10.1.2 Control Intervention (Standardtreatment / Gold standard)

The main operation will be performed as planned. For the closure of the abdominal wall, a standard technique will be applied using a running suture of PDS 1 loop. The distance of the sutures to the fascial border is 1cm and the distance between two stitches is not more than 1cm. The total length of suture is at least 4 times the total length of the abdominal incision. Skin closure will be performed using single stitches with gaps in between stitches of at least 2cm. Alternatively, the skin can be left open and treated with VAC. In case of staged laparotomy the control intervention is performed at the final operation.

10.2 Data Collection and Follow-up for withdrawn participants

The database is designed by the Department of Visceral Surgery and Medicine and consists of a REDcap database. Original data are stored on a server of the Inselspital Bern. A data back-up for the database is run daily. Withdrawn patients are taken into the analysis and data are used for hernia-free survival curve.

10.3 Trial specific preventive measures

Pregnant patients, women < 45 years, prior mesh implantation, septic shock, ASA ≥ 5 and known sensitivity to porcine material and Polysorbat 20 lead to exclusion from the trial.

- Pregnant women are excluded because of additional risk of abortion with mesh implantation.
- Prior mesh implantation leads to exclusion due to the already reinforced fascia. Additional mesh implantation would be an overtreatment.
- Patients with septic shock are excluded due to high mortality in this cohort and the associated possible additional risk of complication.
- ASA ≥ 5 see prior statement.
Patients with known sensitivity to porcine material or Polysorbate 20 are excluded. The mesh consists of these materials and implantation of the mesh might lead to a reaction in these patients (See Contraindication in Instructions for use, Appendix 7).

10.4 Return or Destruction of Study Drug / Medical Device

Not used medical devices will be returned to the company.
11. STUDY OUTCOMES, ASSESSMENTS AND FOLLOW-UP

11.1 Study outcomes and its assessments

11.1.1 Primary outcome

- Death or hernia up to 18 months (hernia-free survival) assessed clinical and by ultrasonography

11.1.2 Secondary outcomes/safety outcomes

- Postoperative fascial dehiscence at 30 days postoperative: As reported in prior reports / operation reports.
- Mortality at 90 days postoperative: As reported in medical reports.
- Surgical site infection at 30 days postoperative: See 12.2.1 Follow-up 30 days. Surgical site infection will be diagnosed according to the criteria of Swissnoso (Appendice 9.).
- Intestinal fistula at 30 days postoperative: Assessment by fluid output
- Small bowel obstruction at 6 months, 12 months, 18 months: As reported in prior reports and as reported by the patient him-/herself.
- Postoperative pain at 6 months, 12 months, 18 months: As reported by the patient him-/herself (See Appendice 4.-VAS Score).
- Mesh infection at 6 months, 12 months, 18 months: Assessed according to the criteria of Swissnoso (Appendice 9.) by the surgeon who examines the patients at follow-up.
- Mesh explantation at 6 months, 12 months, 18 months: As reported in operation reports /other reports and as reported by the patient him-/herself.

11.1.3 Other outcomes of interest

- Age: Will be calculated from the year of birth.
- BMI: Will be calculated from height and weight at time of admission.
- Comorbidities: As reported in prior reports and as reported by the patient him-/herself
- ASA score: as estimated by the Anestesiologist
- Immunosuppression: As taken by the patient

11.2 Procedures at each visit

Patients will be closely monitored with 4 follow-up visits (6 weeks, 6, 12 and 18 months).

11.2.1 Follow-up 30 days / 6 weeks

- Follow-up items are displayed in the CRF (Appendice 4). General condition will be assessed. All patients additionally will receive a follow-up phone call 30 days after the operation to assess incidence of surgical site infections and other complications according to the definitions of Swissnoso.
11.2.2 Follow-up at 6 months/12/18 months

- Follow-ups will be performed at discharge, after 6 months, 12 months and 18 months including clinical examinations and if necessary by laboratory tests by an investigator who is not involved in the medical care of the patients. The follow-ups will be performed according the CRF.

- An ultrasonography will be performed at each follow-up visit by an investigator who is not involved in the medical care of the patients and is well trained detecting incisional hernia by ultrasound.

- At follow-up, patients undergo a standardized interview with the assessment of abdominal pain using the visual analog scale (0-10).
12. SAFETY

12.1 Medical Device Category A studies

12.1.1 Definition and Assessment of safety related events

Safety related events are health hazards, which occur after emergency operation and that need measure. All subjects experiencing safety related events must be monitored until the symptoms subside and any clinically relevant changes in laboratory values have returned to baseline, or until there is a satisfactory explanation for the changes observed. The results of any additional diagnostic measures taken because of health hazards and not included in the protocol should be attached to the case record forms giving the date on which they were carried out.

Pre-existing diseases present prior to administration of study intervention, will be documented as concomitant diseases as part of participant history in the CRF. Any disease newly occurring or increasing in severity during the course of the trial will be documented. The start date for health hazards that were present at the study start and that worsen during the study should be reported as the date the events worsened, not the date the events began pre-study. Event text may include the word "worsened" or "exacerbated".

All health hazards and any treatments administered for these will be recorded in the source documents and the CRFs. Start and stop dates, severity, action taken, relationship to study intervention, and outcome for each safety related event will be recorded on the CRF’s. Safety related events must be reported using valid medical terms; if a diagnosis is made, the diagnosis, not the individual symptoms, should be the reported event. All safety related event must be followed until resolution or until no further improvement is expected.

12.1.2 Reporting of Safety related events

Reporting to Sponsor-Investigator:

Health hazard that require measures are reported to the Sponsor-Investigator within 24 hours upon becoming aware of the event.

Reporting to Authorities:

In Category A studies it is the Investigator’s responsibility to report to the local Ethics Committee;

- Health hazards that require measures, they are reported within 2 days

Additionally safety related events will be reported to LifeCell quarterly.
13. STATISTICAL METHODOLOGY

13.1 Hypothesis

H₀: Implantation of an intraperitoneal mesh in patients undergoing emergency laparotomy does not reduce the risk of incisional hernia.

H₁: Implantation of an intraperitoneal mesh in patients undergoing emergency laparotomy reduces the risk of incisional hernia.

13.2 Determination of Sample Size

Sample size calculation was based on the primary outcome of the trial: hernia-free survival. The incidence of incisional hernia in patients undergoing emergency surgery as reported in the literature varies between 33-54% after a mean follow-up of 16.7 months and median follow-up of 74 months, respectively [1,2]. Recent mortality rates for emergency general surgery also vary and are only available for a 30 day follow-up: 3.74 to 6.8% [33, 34]. For the purpose of this sample size calculation, we will use the following incidences of hernia in the group without prophylactic mesh: 18% at 12 months and 35% at 18 months and we estimate that 10% of patients will have died at 12 months and 15% at 18 months. According to our own findings and another published report we expect an incidence of incisional hernia with prophylactic mesh repair of 6% after a mean follow up of 16.7 months [2, 10]. We assume that the effect of mesh repair will mainly be on hernias and only minimal on mortality. Consequently, we used a hazard ratio of 0.4 for the sample size calculation. We considered a cumulative loss to follow-up of 15% at 18 months. For the sample size calculation, we defined the level of significance at a two-sided 5% and power of 80%. Using an unweighted log-rank test with local alternatives, this results in a required sample size of 118 patients overall or 59 per group. Sample size calculation was done in Stata using the artsurv command [35].

13.3 Planned Analyses

13.3.1 Datasets to be analysed, analysis populations

The primary analyses will analyse all patients in the group they were randomized regardless of any protocol violations including drop-out. Drop-outs will be censored at the time of the last known status. Secondary analyses will be done for a per-protocol population were only patients will be included who actually received the allocated intervention and who completed the follow-up.

13.3.2 Primary Analysis

- Hernia-free survival will be analyzed as time-to-event outcome. Patients lost to follow-up will be censored at the time of last known status. Kaplan-Meier plots will be used to visualize the incidence over time and a logrank test will be used to compare the two groups. Cox regression will
be used for secondary analyses where we will include important prognostic factors in the model. The level for significance is set at a two-sided level of 5%.

**13.3.3 Secondary Analyses / safetyanalysis**

- Binary outcome parameters (according to endpoints) will be compared between the two study groups using the chi-square test.
- Continuous outcomes (pain) will be analysed using ANCOVA with adjustment for baseline values. Patients lost to follow-up will be excluded from the analysis. To address missing values, we will perform two sensitivity analysis: 1) missing values will be replaced by the mean follow-up value from patients with available data and 2) a worst case scenario where missing values will be replaced by the maximum follow-up value from patients with available data.
- Logistic regression will be used for secondary analyses of binary outcomes. Analyses will be adjusted for the same factors as in the Cox regression. Linear regression will be used for continuous outcomes adjusted for the same factors as in the Cox regression.

**13.3.4 Deviation(s) from the original statistical plan**

Any deviation from the original statistical plan will be described and justified in the final project report.

**13.4 Handling of missing data and drop-outs/data processing**

Multiple imputation will be done for missing data. Drop-out will handled as mentioned above. We do not plan procedures to modify raw data before analysis.
14. QUALITY ASSURANCE AND CONTROL

14.1 Data handling and record keeping / archiving

Study data will be handled only by investigators and will be recorded in a coded form on a REDCap database server. All study related documents will be archived.

14.1.1 Case Report Forms

All protocol required procedures along with information necessary to report the observations and tests described in this protocol will be recorded in the online and as hard copy by the Department of Visceral Surgery and Medicine, Bern University Hospital. All data entered on the CRF must be documented in a source document with all the information on which the entries in the CRF are based being available in the patient files e. g. results of laboratory investigations. The case report form is not a source document. The clinical investigator is responsible for the identity of the data in the patient file and the correct entry of the data into the CRF. The investigator must review all pages within the CRF for accuracy and consistency with the protocol, and sign and date the CRF sign-off page(s) upon completion. The patient consent forms designated for the clinical investigator are also to be kept in the study documentation. The Clinical Trial Unit Bern has agreed to support and monitor the study. Participants must not be identified in the CRF by name or initials and birth date. Appropriate coded identification, e.g. participant number in combination with year of birth must be used.

14.2 Data management/security and back-up

The database is designed by the Department of Visceral Surgery and Medicine and consists of a Redcap database. The database servers are kept in a locked, air-conditioned server-room at the Inselspital, University of Bern, Switzerland. Only the system and database administrators have access to these servers and back-up tapes. A data back-up for the database is run daily. The back-up tapes are stored in a safe in a different building. Authorized users have access to the database using a personal password. A role concept (site investigator, statistician, monitor, administrator etc.) regulates permission for each user to use the database as he/she requires.

14.2.1 Analysis and archiving

For final analyses data files will be extracted from the database into statistical packages to be analyzed. The status of the database at this time is recorded in special archive tables. These tables cannot be altered in future. The study database with all archive tables will be securely stored by Inselspital Bern for at least 15 years.
14.3 Confidentiality, Data Protection

Data generation, transmission, storage and analysis of health related personal data within this project will follow strictly the current Swiss legal requirements for data protection and will be performed according to ClinO Art. 18, 58.

Health related personal data captured during this project are strictly confidential and disclosure to third parties is prohibited; coding will safeguard participants' confidentiality.

Project data will be handled with uttermost discretion and only be accessible to authorised personnel. If requested the project data can be accessed by third parties e.g. for replication or further analysis in a coded form.

Sealed envelopes are used for the randomization for the individual patient. The white plastic leaves clear and indelible marks to any attempt of tampering or unauthorized opening. The randomization will be documented with a number from 1-118 by the study nurses in the patient identification log. The key of this log will be stored in the locked cupboard in the office of the study nurses (2nd floor, Klinik für Dermatologie, Inselspital Bern). Only system administrators will have access to the list to ensure concealment of allocation.

Health related data of patients do not consist the exact date of birth; it will only include the year of birth.

Patient who later on revoke their consent will be anonymised after termination of data analysis.

14.4 Monitoring procedures and data quality assurance

In order to guarantee a high quality of the study and data retrieval, on-site monitoring will be performed by CTU Bern, Finkenhübelweg 11. Data protection rights will be respected. Before study start (first participant in) a monitoring plan detailing all monitoring related procedures will be developed.
15. PUBLICATION AND DISSEMINATION POLICY

15.1 Publication of results

The results of the study will be published via oral communications during national and international meetings and via written publications. The final report will present the results of the study, including appropriate tables and figures in the spirit of an unbiased objectivity. First results concerning feasibility and safety will be published after a follow-up of one year, and results of the primary outcome with a follow-up of up to 18 months. Publications will be authored by Manuel Jakob and Guido Beldi, as senior author. Co-authorship on any of the publications will be based on conceptual contribution to the study according to the criteria of the International Committee of Medical Journal Editors.

15.2 Data sharing

Project data can be accessed by interested third parties e.g. for replication or further analysis in a coded form.

16. FUNDING AND SUPPORT

Sponsor of this research project is the Inselspital University Hospital of Bern represented by Prof. Dr. med. G. Beldi of the Department of Visceral Surgery and Medicine.

The study has financial support from LifeCell.

17. INSURANCE

A contract between Lifecell and Inselspital University Hospital Bern will cover extra costs for severe adverse events due to the study intervention.

Treatment for chronic mesh infection, intestinal fistula, adhesions, and intraabdominal organ lesion are covered by the patients insurance.
18. REFERENCES

19. APPENDICES

1. Datenerhebung präoperativ
2. Datenerhebung Hospitalisation
3. Datenerhebung Operation
4. Datenerhebung Follow up
5. Datenerhebung Follow up Wundinfektion
6. Datenerhebung Safety related events
7. Medical Devices: Instructions for Use
8. Medical Devices: Conformity Marking
9. Swissnoso
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

1. Datenerhebung präoperativ

|----------|-------------|

<table>
<thead>
<tr>
<th>Datum Einwilligung zur Studienteilnahme:</th>
<th>Op. Datum</th>
</tr>
</thead>
</table>

Ein- und Ausschlusskriterien

<table>
<thead>
<tr>
<th>Alter &gt; 18 Jahre</th>
<th>Ja ☐ Nein ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notfall-Laparotomie</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Schwangerschaft (SST-Test)</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Septischer Schock; Hypotension trotz Gabe von i.v. Kristalloiden [1].</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Notfall-Laparoskopie mit Konversion zu Laparotomie</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>ASA Score ≥ 5</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Informed consent</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Vorgängige Netzimplantation</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Überempfindlichkeit gegen porcines Material / Polysorbat 20</td>
<td>Ja ☐ Nein ☐</td>
</tr>
</tbody>
</table>

Diagnose:
Abdominale Voroperation

<table>
<thead>
<tr>
<th>Nein ☐</th>
<th>Ja ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welche:</td>
<td>Jahr:</td>
</tr>
</tbody>
</table>

Nebendiagnosen

<table>
<thead>
<tr>
<th>Koronare/Valvuläre Herzkrankheit</th>
<th>Ja ☐ Nein ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumorerkrankung</td>
<td>Ja ☐ Nein ☐ Welche:</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Nikotinabusus/Pneumopathie</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>ImmunsuppressiveTherapie</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Antikoagulation</td>
<td>Ja ☐ Nein ☐ Welche:</td>
</tr>
<tr>
<td>Niereninsuffizienz</td>
<td>Ja ☐ Nein ☐ Dialyse: Ja ☐ Nein ☐</td>
</tr>
</tbody>
</table>
**Hepatopathie**: Ja ☐  Nein ☐

**Klinische Untersuchung:**

<table>
<thead>
<tr>
<th>Gewicht (kg)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grösse (cm)</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
</tr>
<tr>
<td>ASA (1-4)</td>
<td></td>
</tr>
</tbody>
</table>

**Sepsis-Zeichen:**

<table>
<thead>
<tr>
<th>Blutdruckwert systolisch&lt;100mmHg</th>
<th>Ja ☐  Nein ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herzfrequenz&gt;100 bpm</td>
<td>Ja ☐  Nein ☐</td>
</tr>
<tr>
<td>Atemfrequenz&gt;20 pm</td>
<td>Ja ☐  Nein ☐</td>
</tr>
<tr>
<td>Temperatur&gt;38.0°,&lt;36.0° Celsius</td>
<td>Ja ☐  Nein ☐</td>
</tr>
<tr>
<td>Oligo-/Anurie</td>
<td>Ja ☐  Nein ☐</td>
</tr>
<tr>
<td>GCS &lt; 13</td>
<td>Ja ☐  Nein ☐</td>
</tr>
</tbody>
</table>

Wenn ja welche: _______________________________________________________

Bemerkungen: _______________________________________________________

Untersuchender Arzt: __________________________  Datum: __________

Principleinvestigator: __________________________  Datum: __________
2. Datenerhebung **Hospitalisation**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Datum</td>
<td>Einwilligung zur Studienteilnahme</td>
</tr>
</tbody>
</table>

Austrittsdatum:

**Komplikationen**

<table>
<thead>
<tr>
<th>Komplikation</th>
<th>Ja</th>
<th>Nein</th>
<th>Datum / Therapie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platzbauch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wundinfekt</td>
<td></td>
<td></td>
<td>Wenn ja, siehe unten</td>
</tr>
<tr>
<td>Intestinale Fistel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ileus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hämatom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reoperation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netz Explantation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andere</td>
<td></td>
<td></td>
<td>Welche:</td>
</tr>
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Bemerkungen: _________________________________________________________

**Wenn postoperative Wundinfektion**

<table>
<thead>
<tr>
<th>Bakteriologischer Abstrich</th>
<th>Ja</th>
<th>Nein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keimnachweis:---------------</td>
<td>-----</td>
<td>------</td>
</tr>
</tbody>
</table>

☐ Grad 1 oberflächlich
☐ Grad 2 bis auf Faszie reichend
☐ Grad 3 intraabdominal

Netz freiliegend | Ja | Nein |
Therapie postoperativer Wundinfekt

<table>
<thead>
<tr>
<th>VAC</th>
<th>Ja</th>
<th>Nein</th>
<th>Datum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andere</td>
<td>Ja</td>
<td>Nein</td>
<td>Datum:</td>
</tr>
<tr>
<td>Andere/welche:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bemerkungen: _______________________________________________________

Clavien-DindoKlassifikation (bitte nur eine auswählen)

<table>
<thead>
<tr>
<th>Grad I</th>
<th>Nicht behandlungsbedürftig, keine Verlängerung des Spitalaufenthaltes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grad II</td>
<td>Medikamentös behandlungsbedürftig und/oder Verlängerung des Spitalaufenthaltes</td>
</tr>
<tr>
<td>Grad III</td>
<td>Operativ, radiologisch oder interventionell behandlungsbedürftig</td>
</tr>
<tr>
<td>Grad III a</td>
<td>Intervention nicht unter Vollnarkose</td>
</tr>
<tr>
<td>Grad III b</td>
<td>Intervention unter Vollnarkose</td>
</tr>
<tr>
<td>Grad IV</td>
<td>Lebensbedrohliche Komplikation, intensivmedizinisch behandlungsbedürftig</td>
</tr>
<tr>
<td>Grad IV a</td>
<td>Einzelorganversagen</td>
</tr>
<tr>
<td>Grad IV b</td>
<td>Multiorganversagen</td>
</tr>
<tr>
<td>Grad V</td>
<td>Tödlich</td>
</tr>
<tr>
<td>Datum Exitus letalis:</td>
<td></td>
</tr>
</tbody>
</table>

Bemerkungen: _______________________________________________________

Safety related event:

Sind neue unerwünschte Vorkommnisse aufgetreten:

Ja ☐ Nein ☐ (wenn Ja: Safety related event CRF ausfüllen)

Untersuchender Arzt: __________________________  Datum: __________
3. Datenerhebung **Operation**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Datum Einwilligung zur Studienteilnahme:</th>
<th>Op. Datum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

**Operateur:**

**Operation:**

<table>
<thead>
<tr>
<th>Dauer Operation (Gesamtdauer in min)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dauer Implantation Netz (min):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intraabdominaler Bakteriologischer Abstrich</th>
<th>Ja ☐ Nein ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-Gabe; wenn Ja Anzahl:</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Darmresektion:</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Stomaanlage</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Intraoperative Komplikation:</td>
<td></td>
</tr>
<tr>
<td>Darmverletzung</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Blutung</td>
<td>Ja ☐ Nein ☐</td>
</tr>
<tr>
<td>Netzkomplikationen</td>
<td>Ja ☐ Nein ☐</td>
</tr>
</tbody>
</table>

**Bemerkungen:__________________________________________________________**
Mannheim Peritonitis Index

<table>
<thead>
<tr>
<th>Risikofaktor</th>
<th>Punkte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alter &gt; 50 Jahre</td>
<td>5</td>
</tr>
<tr>
<td>Geschlecht weiblich</td>
<td>5</td>
</tr>
<tr>
<td>Organversagen</td>
<td>7</td>
</tr>
<tr>
<td>Malignom</td>
<td>4</td>
</tr>
<tr>
<td>Dauer der Peritonitis vor der OP &gt; 24 h</td>
<td>4</td>
</tr>
<tr>
<td>Ausgangspunkt ist nicht der Dickdarm</td>
<td>4</td>
</tr>
</tbody>
</table>

Exsudat (bitte nur eine auswählen)
- Klar
- Trüb-eitrig
- Kotig

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>6</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, Nein</td>
<td></td>
<td></td>
<td></td>
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</table>

Total

Bemerkungen: _______________________________________________________

Untersuchender Arzt: __________________________  Datum: ___________
4. Datenerhebung **Follow Up**

|----------|-------------|

<table>
<thead>
<tr>
<th>Datum</th>
<th>Einwilligung zur Studienteilnahme</th>
<th>Op. Datum</th>
</tr>
</thead>
</table>

**Hatten Sie in der letzten Woche Schmerzen?**

<table>
<thead>
<tr>
<th>Schmerz</th>
<th>Lokalisation:</th>
<th>Stärke (VAS 0-10)</th>
<th>Bemerkungen</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Wie oft</th>
<th>Ja ☐ &lt;1/Woche</th>
<th>Ja ☐ &gt;1/Woche</th>
<th>Ja ☐ täglich</th>
</tr>
</thead>
</table>

Nehmen sie Analgetika | Ja ☐ | Nein ☐ |

**Komplikationen / Befunde:**

<table>
<thead>
<tr>
<th>Komplikation</th>
<th>Ja ☐</th>
<th>Nein ☐</th>
<th>Bemerkungen</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Narbenhernie</th>
<th>Ja ☐</th>
<th>Nein ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hämatom</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
<tr>
<td>Wundinfekt</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
<tr>
<td>Intestinale Fistel</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
<tr>
<td>Ileus/Passagestörung</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
<tr>
<td>Reoperation</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
<tr>
<td>Netzexplantation</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
<tr>
<td>Andere</td>
<td>Ja ☐</td>
<td>Nein ☐</td>
</tr>
</tbody>
</table>

Bemerkungen: ____________________________________________________________
Wenn postoperative Wundinfektion

<table>
<thead>
<tr>
<th>Bemerkungen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakteriologischer Abstrich</td>
</tr>
<tr>
<td>Keimnachweis: .................................................................</td>
</tr>
</tbody>
</table>

| Grad 1 oberflächlich | Ja ☐ Nein ☐ |
| Grad 2 bis auf Faszie/Netz reichend | Ja ☐ Nein ☐ |
| Grad 3 intraabdominal | Ja ☐ Nein ☐ |
| Netz freiliegend | Ja ☐ Nein ☐ |

Therapie postoperativer Wundinfekt

| VAC | Ja ☐ Nein ☐ |
| Andere: | Ja ☐ Nein ☐ |
| Andere/welche: |

Bemerkungen: ____________________________________________

Safetyrelatedevent:

Sind neue unerwünschte Vorkommnisse aufgetreten:

Ja ☐ Nein ☐

(wenn Ja: Safetyrelatedevent CRF ausfüllen)

Hinweise für Narbenhernie im Ultraschall

Ja ☐ Nein ☐

Bemerkungen/Lokalisation:

Exitus

Ja ☐ Nein ☐

Datum:

Todesursache:

Untersuchender Arzt: __________________________  Datum: __________
5. Datenerhebung **Follow-up Wundinfektion**

|----------|-------------|-------|-----------------------------------|-----------|

<table>
<thead>
<tr>
<th>Datum postoperativ</th>
<th>Untersucher:</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Tage postoperativ</td>
<td></td>
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</tbody>
</table>

**Wundinfektion:**

<table>
<thead>
<tr>
<th>Wundinfekt</th>
<th>Ja</th>
<th>Wenn ja, siehe untern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grad 1 oberflächen</td>
<td>Ja</td>
<td></td>
</tr>
<tr>
<td>Grad 2 bis auf Faszie reichend</td>
<td>Ja</td>
<td></td>
</tr>
<tr>
<td>Grad 3 intraabdominal</td>
<td>Ja</td>
<td></td>
</tr>
<tr>
<td>Netzfreiliegend</td>
<td>Ja</td>
<td></td>
</tr>
</tbody>
</table>

**Safety related events:**

Sind neue unerwünschte Vorkommnisse aufgetreten:

Nein □ Ja □ (wenn Ja: Safety related event CRF ausfüllen)

Untersucher Study nurse/ Arzt: __________________________  Datum: _________

Principle investigator: ____________________________  Datum: _________
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

Datenerhebung Safety related event:

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Datum Einwilligung zur Studienteilnahme</th>
<th>Op. Datum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Safety related event:

Datum Beginn des event:

Datum Stopp des event:

Genaue Beschreibung:

Schweregrad

- Leicht
- Mittel
- Schwer
- Lebensbedrohlich
- Fatal

Zusammenhang mit dem Prüfprodukt

- Nein
- Ja

Zusammenhang mit dem Prozeduren im Versuch (bitte nur eine auswählen)

- Keiner
- Möglich
- Wahrscheinlich

Nein
- Ja

Massnahmen

Datum:

Genaue Beschreibung:
Ausgang des unerwünschten Ereignisses

☐ Keine Folgeschäden
☐ Leichte Beeinträchtigung
☐ Schwere Beeinträchtigung
☐ Tod
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

6. Medical Devices: Instructions for Use (English/German)
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

Table of Contents

Device Description

Institution for purchasing or Strattice™ Swedish

Institution for purchasing or Strattice™ English

Instructions for use or Strattice™ Swedish

Instructions for use or Strattice™ English

Instructions for use or Strattice™ French

Instructions for use or Strattice™ Spanish

Instructions for use or Strattice™ Portuguese

Instructions for use or Strattice™ Italian

Instructions for use or Strattice™ Dutch

Instructions for use or Strattice™ English

Table of Contents
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017
Produktbeschreibung

Das chirurgische Netz ist ein belastbares und biokompatibles Implantat, das durch normale zelluläre und mikrovaskuläre Infiltration in das Empfängergewebe einwächst.

Tierstudien zeigen bei Einhaltung einer minimalen Fixierung am viszeralen Gewebe ein geringes Auftreten von Verklebungen am chirurgischen Netz Strattice™.

Indikationen
Das chirurgische Netz Strattice™ ist als Gewebematrix zur Verstärkung von Weichgewebe und zur chirurgischen Reparaturschädigung oder gerissener Weichgewebemembranen vorgesehen. Zu den Indikationen gehören die Reparatur von Hernien und/oder Körpervorbilddefekten, bei denen zur Erzielung des gewünschten chirurgischen Resultats Verstärkungs- oder Überbrückungsmaterialien eingesetzt werden müssen.

Das chirurgische Netz ist zur Rekonstruktion, zur Wiederherstellung der Kontur und zur Neubildung von menschlichem Weich-Bindegeewebe indiziert, insbesondere dort, wo es zu einem Verlust von Gewebe gekommen ist. Außerdem wird es bei chirurgischen Verfahren zur Behandlung von Hernien und Defekten der Bauchdecke als Stützgewebe verwendet.

Strattice™ wird steril geliefert und darf nur einmalig bei einem Patienten eingesetzt werden.

Kontraindikationen
- Das chirurgische Netz ist porziner Herkunft und darf nicht bei Patienten mit bekannter Überempfindlichkeit gegen porzines Material verwendet werden.
- Da die phosphatgepufferte wässrige Lösung Polysorbat 20 enthält, sollte das chirurgische Netz Strattice™ nicht bei Patienten mit bekannter Überempfindlichkeit gegen diese Substanz verwendet werden.

Achtung
- **Nicht resterilisieren.**
- Nicht verwenden, wenn die Verpackung geöffnet oder beschädigt ist. Nicht verwenden, wenn das Siegel geöffnet oder beschädigt ist.
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017

5. Das chirurgische Standardprotokoll abschließen.
6. Alle nicht benutzten Teile des chirurgischen Netzes Strattice™ unter Beachtung der geltenden Prozeduren, Einrichtung und der geltenden Umweltschutzvorschriften entsorgen.

Definitionen

Kundendienst
*Setzen Sie sich bitte am Tag des Empfangs mit dem Kundendienst in Verbindung, um eine Produktrückerstattung zu vereinbaren.

Bei Beschwerden zum Produkt oder potenziellen unerwünschten Ereignissen wenden Sie sich bitte an den lokalen Vertreter oder den Kundendienst.

Weitere Patentanträge sind gestellt.
7. Medical Device: Conformity Marking
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017
8. Swissnoso
Prophylactic mesh implantation in patients requiring emergency laparotomy for the prevention of incisional hernia: A randomized controlled trial, Version 3.0 06.03.2017
### Formular für Telefon-Interview nach □ 1 Monat □ 1 Jahr:

**Dieses Formular immer mit dem CRF aufbewahren.**

<table>
<thead>
<tr>
<th>Minimum 5 Anrufversuche:</th>
<th>Interview – Datum: ..........................................................</th>
</tr>
</thead>
</table>

**Name, Vorname des Patienten:**

<table>
<thead>
<tr>
<th>Auskunft erhalten von:</th>
<th></th>
<th>Auskunft erhalten von:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Patient</td>
<td></td>
<td>□ Angehöriger oder Pfleger</td>
<td></td>
</tr>
</tbody>
</table>

**Status des Interviews**

<table>
<thead>
<tr>
<th>Status des Interviews</th>
<th></th>
<th>Status des Interviews</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Interview durchgeführt</td>
<td></td>
<td>□ Interview verweigert oder nicht durchführbar</td>
<td></td>
</tr>
<tr>
<td>□ aus den Augen verloren</td>
<td></td>
<td>□ Patient verstorbren</td>
<td></td>
</tr>
<tr>
<td>□ Andere: ..........................................................</td>
<td></td>
<td>□ Andere: ..........................................................</td>
<td></td>
</tr>
</tbody>
</table>

1. **Ihre Erholung nach der Operation vom „... im Spital „... Ist wie verlaufen?**

<table>
<thead>
<tr>
<th>sehr gut</th>
<th>mässig gut</th>
<th>nicht sehr gut oder schlecht</th>
</tr>
</thead>
</table>

   **Kommentare:** ..........................................................................................................

2. **Wurden Sie inzwischen erneut hospitalisiert?** □ nein (wenn nein, weiter mit Frage 3)

<table>
<thead>
<tr>
<th>ja, nämlich:</th>
</tr>
</thead>
</table>

   **Wo und wann?: ..........................................................**

   **Wegen eines Problem im Zusammenhang mit ihrer Operation?** ........................................

3. **Haben Sie seit ihrem Spitalaustritt Ihren Hausarzt, den Chirurgen oder Notfall eines Spitals konsultiert?**

<table>
<thead>
<tr>
<th>ja, nämlich:</th>
<th>nein (wenn nein, weiter mit Frage 4)</th>
</tr>
</thead>
</table>

   **Wen, wo und wann? ........................................................................................................

   **Aus welchem Grund?**

<table>
<thead>
<tr>
<th>nur um die Fäden zum vorgesehenen Zeitpunkt zu entfernen</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>zur üblichen Nachkontrolle</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>wegen Beschwerden im Zusammenhang mit der Operation oder der Wundheilung</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>wegen Beschwerden ohne Zusammenhang mit der Operation oder der Wundheilung</th>
</tr>
</thead>
</table>
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4. Hatten Sie seit Ihrem Spitalaustritt Fieber?
   - □ ja, nämlich: ..........°C
   - □ nein (wenn nein, weiter mit Frage 5)
   - □ ohne den Arzt aufzusuchen und wahrscheinlich ohne Zusammenhang mit meiner Operation
   - □ wahrscheinlich im Zusammenhang mit meiner Operation (Schmerzen, Rötung, lokaler Ausfluss), aber ich habe meinen Arzt (noch) nicht konsultiert
   - □ laut meinem Arzt ohne Zusammenhang mit meiner Operation
   - □ laut meinem Arzt im Zusammenhang mit meiner Operation
   Kommentare: ...........................................................................................................................

5. Haben Sie eine Sekretion oder Elter im Bereich der Operationsnarbe festgestellt oder haben Sie eine Rötung, Überwärzung, Schwellung oder Schmerzen bemerkt, welche Ihnen abnormal vorgekommen sind?
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   - □ ja □ nein
   Beschreibung der klinischen Zeichen: ...........................................................................................................................

6. Haben Sie seit Ihrem Spitalaustritt Antibiotika erhalten?
   - □ nein □ weiss nicht
   - □ ja, aber wegen Beschwerden ohne Zusammenhang mit meiner Operation
   - □ ja, wegen Beschwerden, die sicher oder vielleicht in Zusammenhang mit meiner Operation stehen
   - □ ja, nämlich: ...........................................................................................................................
   Kommentare: ...........................................................................................................................

7. Sind Sie einverstanden, wenn wir Ihren Arzt kontaktieren? □ ja □ nein

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