

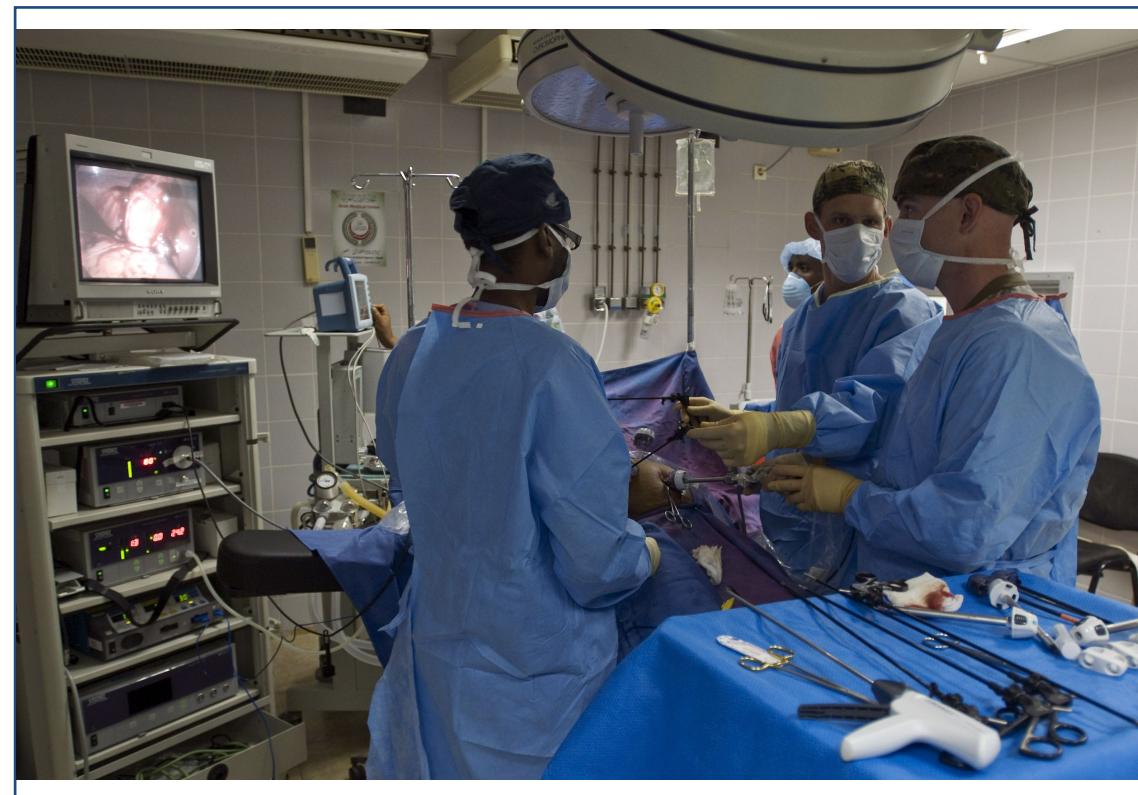
Endoscopic Imaging

Bildbearbeitung im Operationssaal



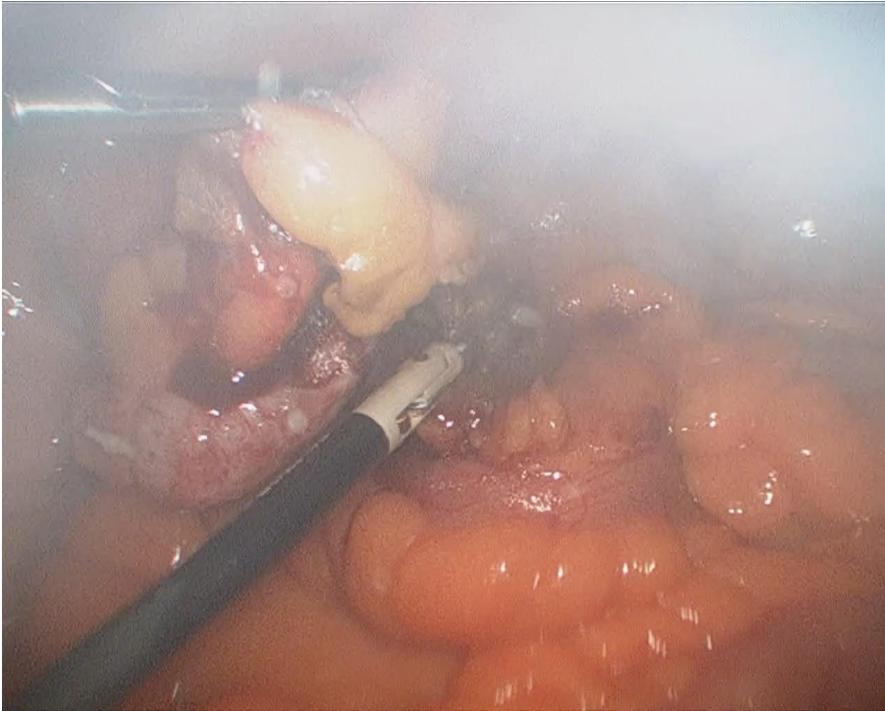
Hospitalization in *Gesundheitszentrum Blaubeuren*

Dr.Tannheimer, (Dr.
Lotspeich)
Cholezystectomy



Ideen:

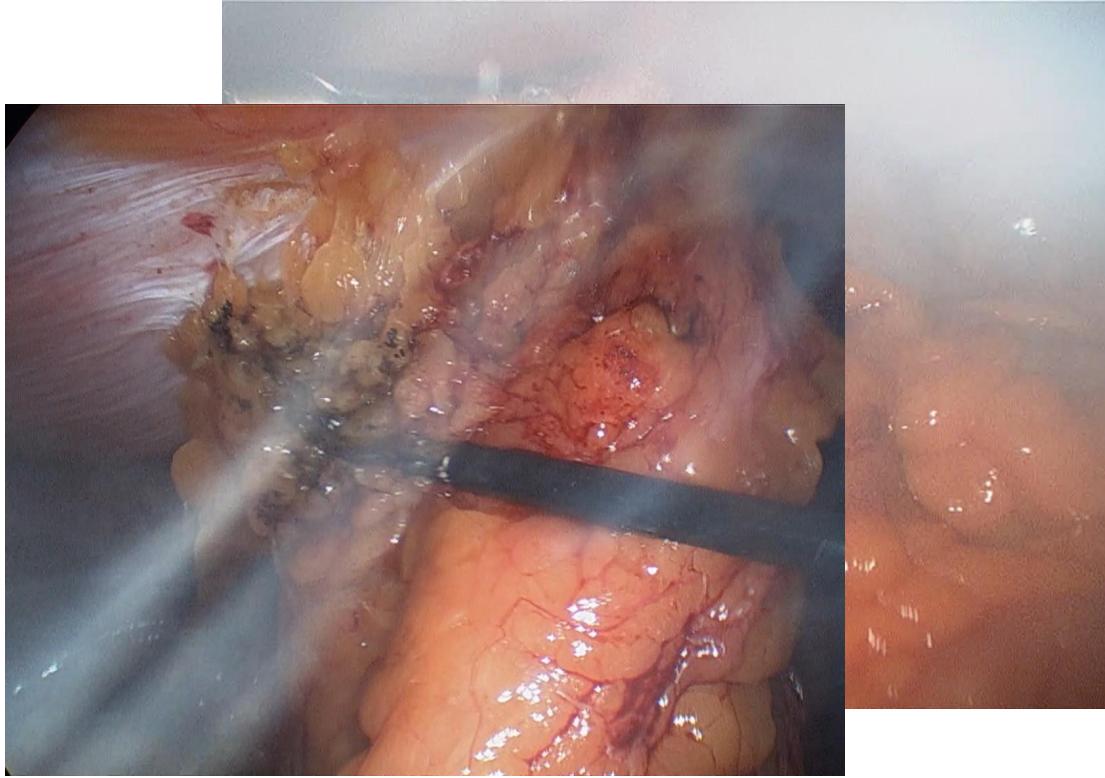
- Kamera in Veres Kanüle
- WiFi- Endoscope



Störungen

- Rauch
- Dampf
- Spritzer

Entfernen



Störungen

- Rauch
- Dampf
- Spritzer

Entfernen

Operationssaal

Creating safety.
With passion.

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Anforderungen

- Kosten Sparen
- Aufwand gering halten

**Keine
extra
Hardware**

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Anforderungen

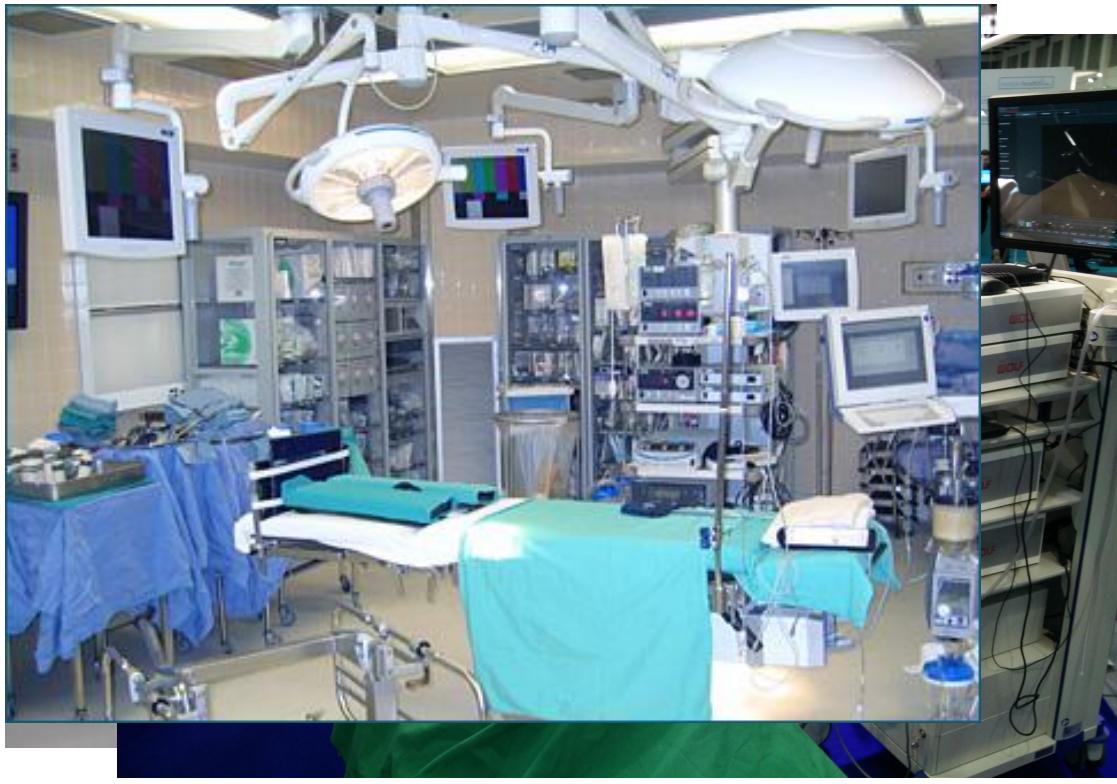
- Kosten Sparen
- Aufwand gering halten

**Keine
extra
Hardware**

Operationssaal

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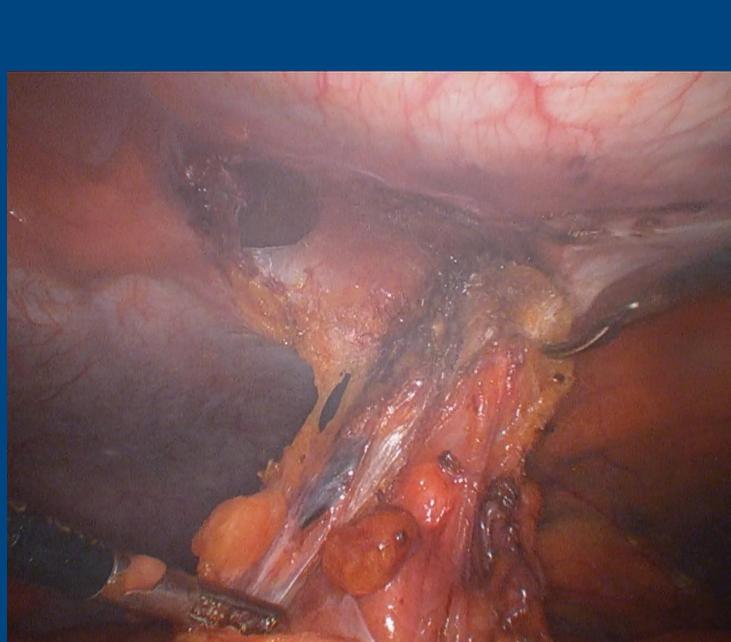
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Anforderungen

- Kosten Sparen
- Aufwand gering halten

**Keine
extra
Hardware**



Beschaffung:

- Kontakt mit Ärzten
- Datenschutz

Keine Daten

Daten - Prototyp

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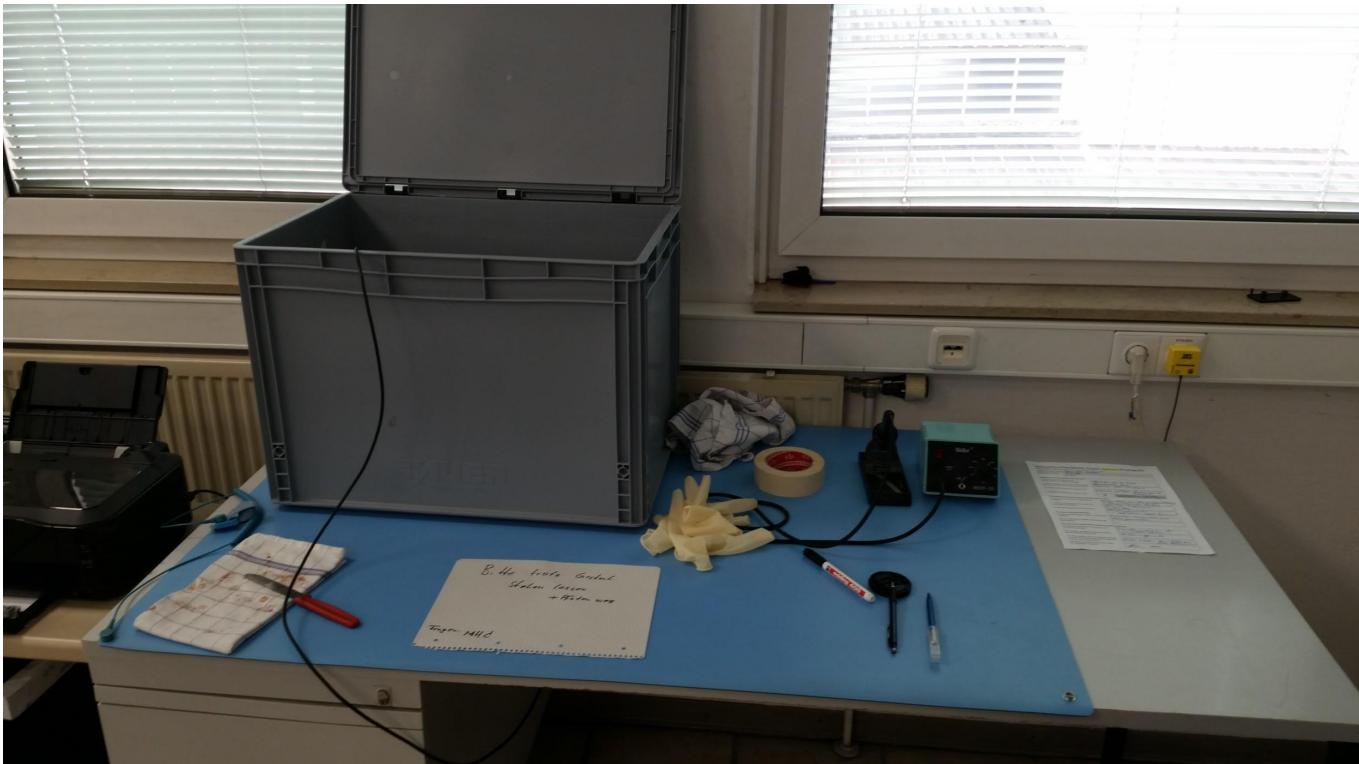
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Selber machen

Prototyp

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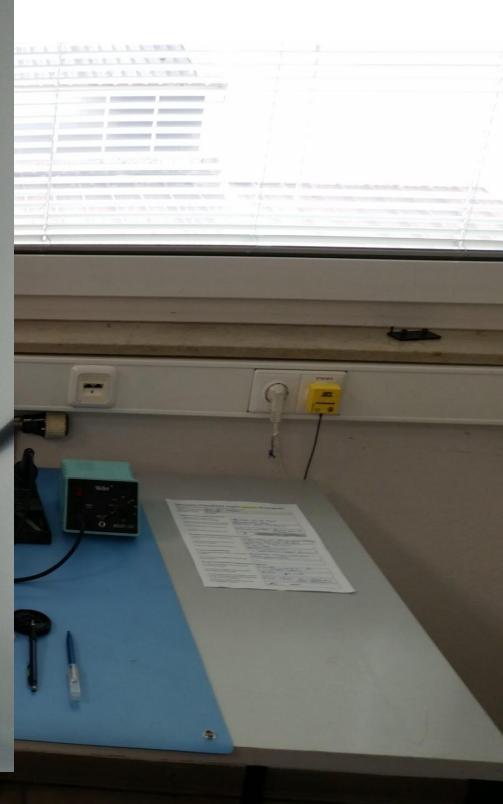
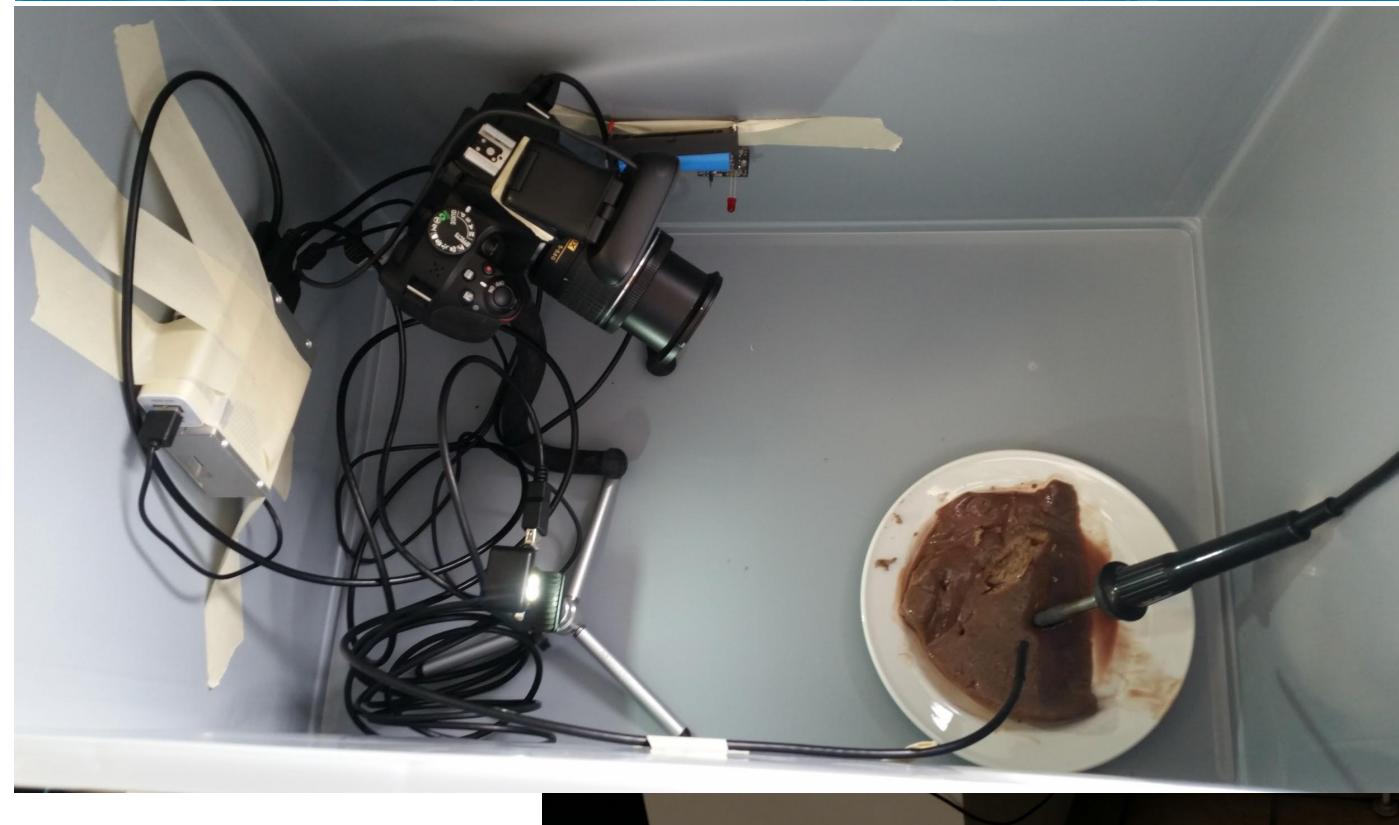
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Prototyp

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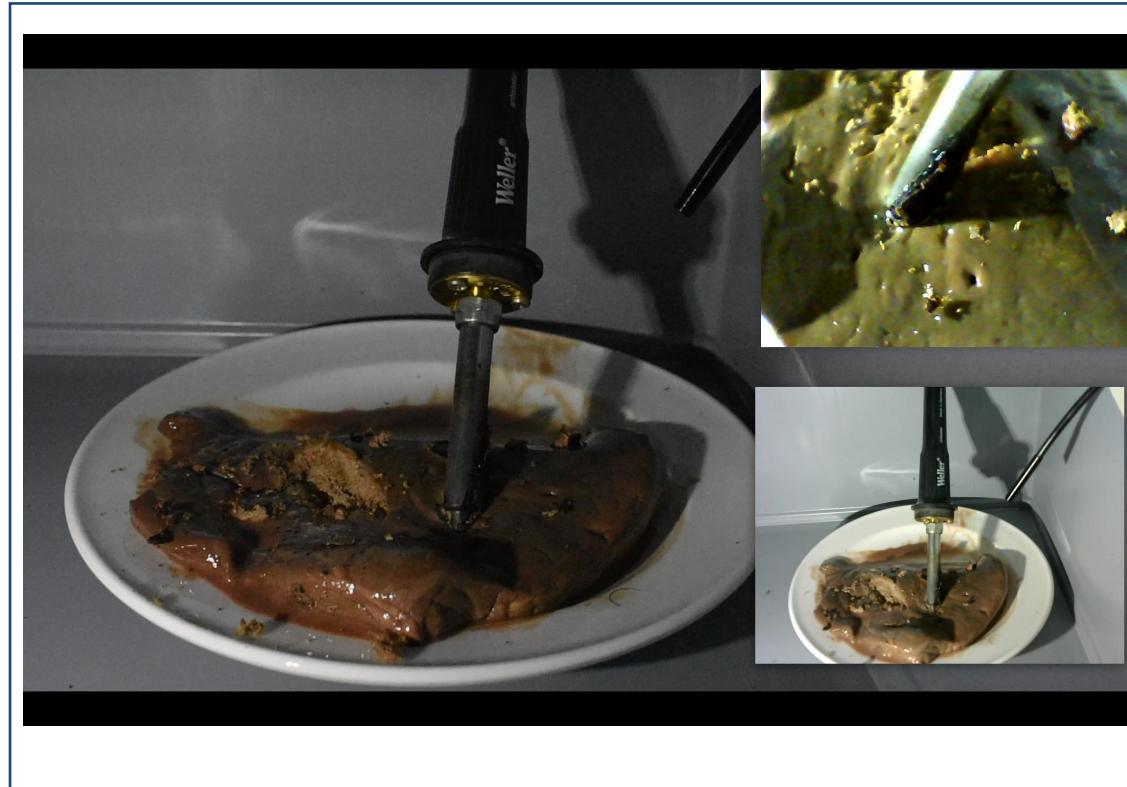


Prototyp

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Ergebnis:



Daten - Prototyp

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Besser selber machen

Versuch

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Besser:

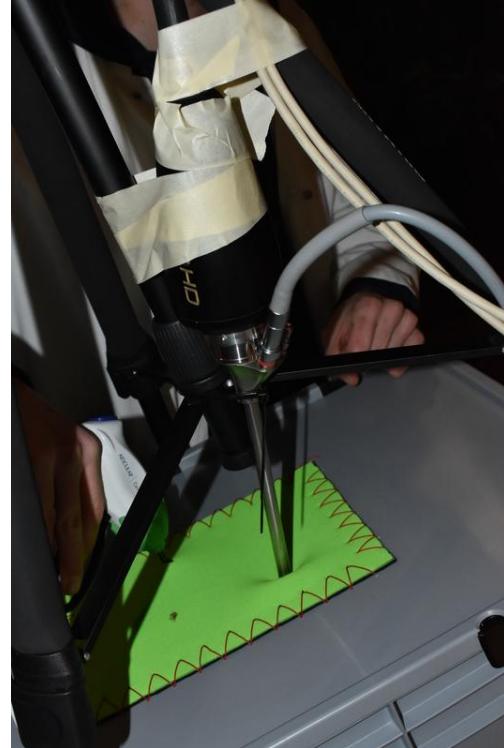
- Frische Organe
- verbessertes Phantom
- **Endoscope**
- **Elektrokauter**



Versuch

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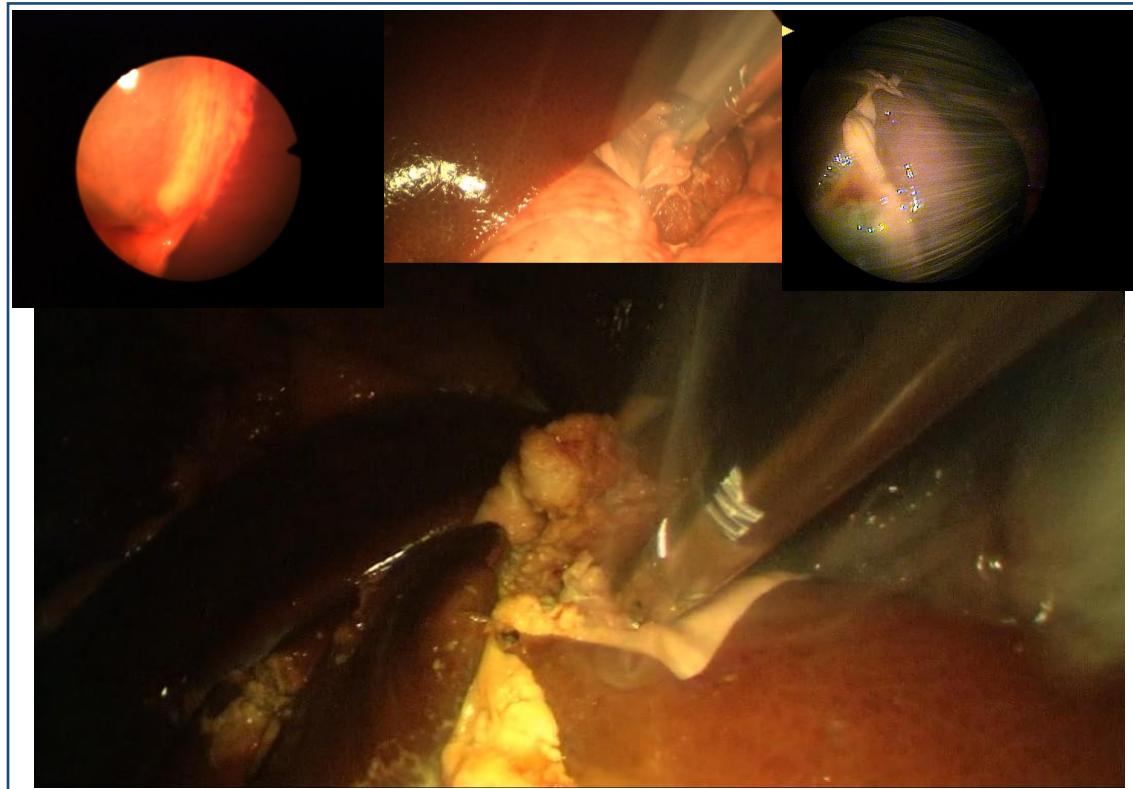
Versuch

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Ergebnis:

98GB Roh-Daten
mit
> 75 min Dauer



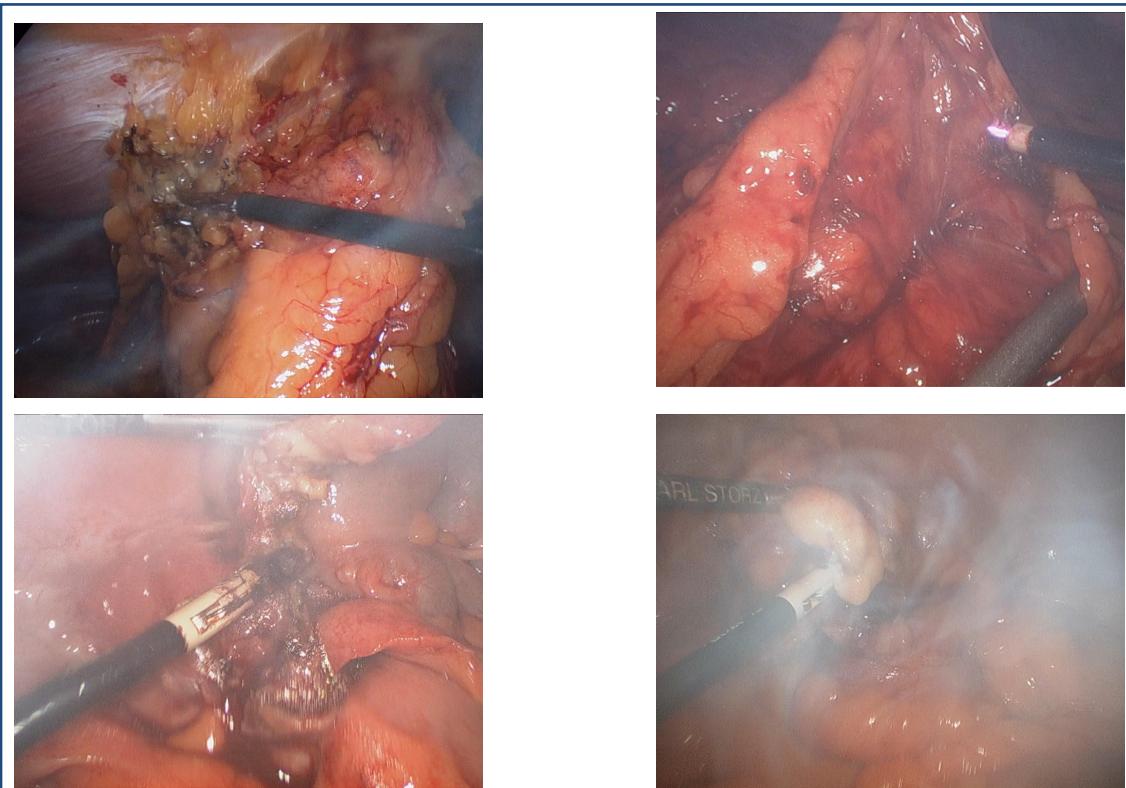
Reale Daten

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Ergebnis:

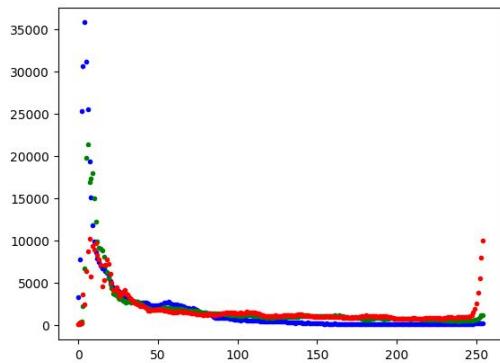
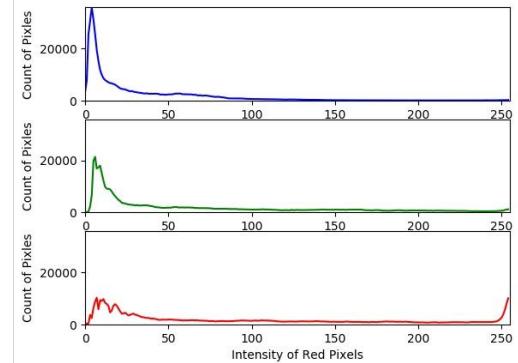
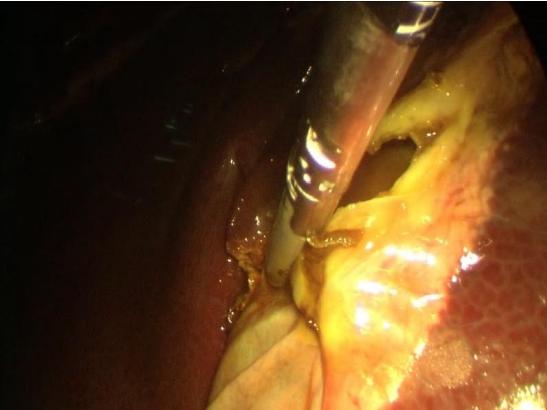
293MB Daten mit
~ 5 min Dauer



Analyse

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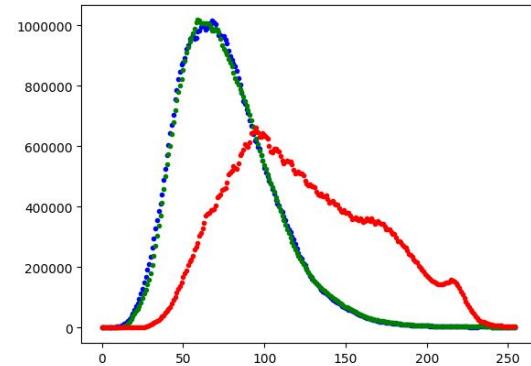
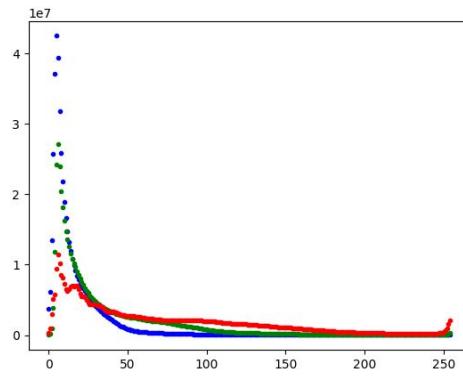
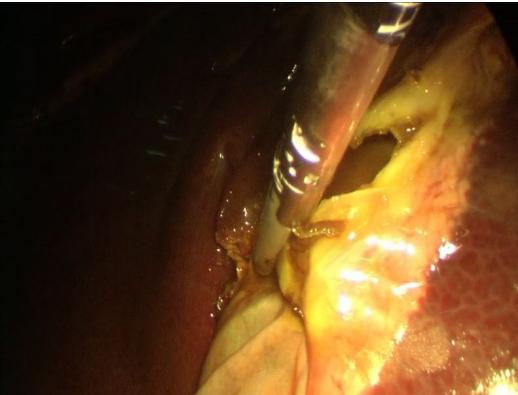
Histogramme

$$\sum\{ \text{Anzahl}[\text{pixel(Rot)}] \}$$

Evaluation

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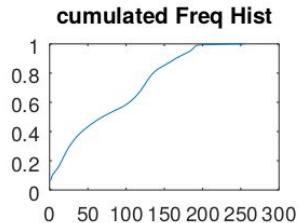
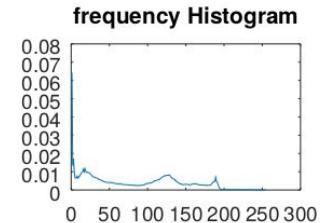
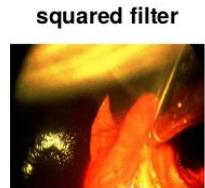
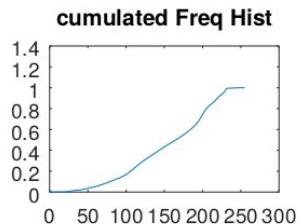
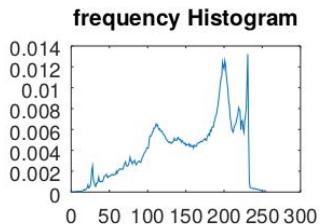
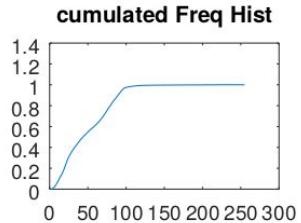
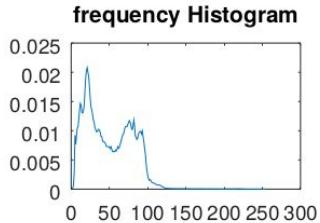
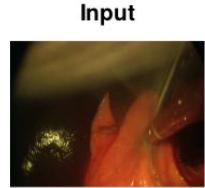
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Algorithmen

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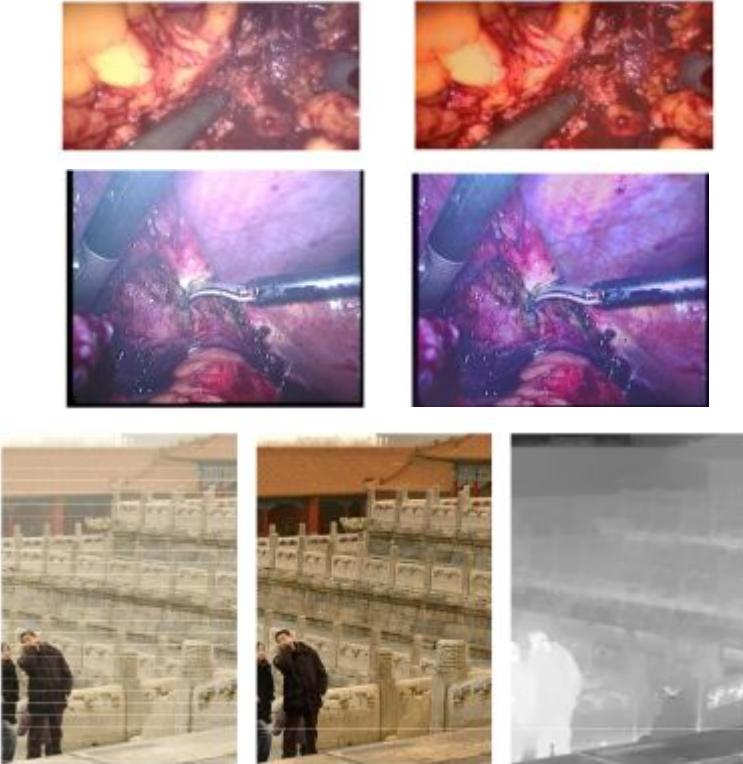
Histogram Matching

anpassung der
Kumulierten
Summe

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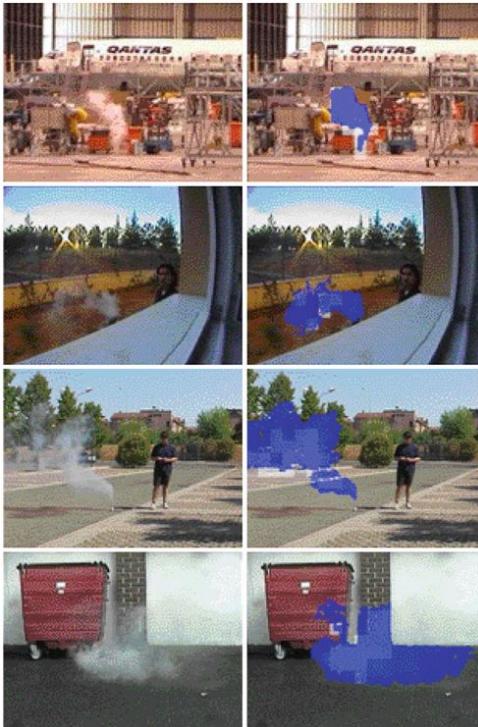
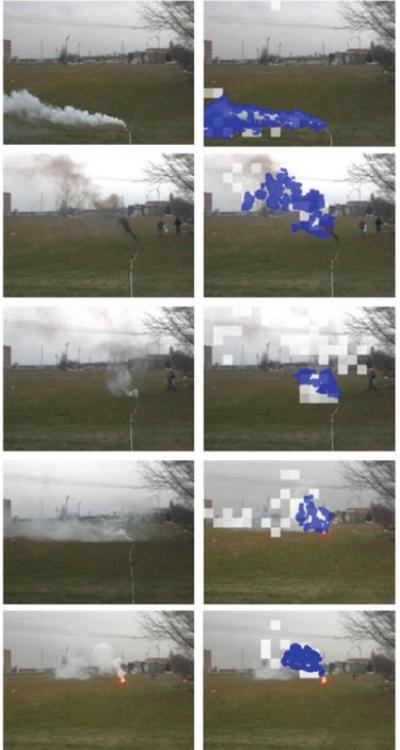


Dark Channel Prior & Smoke Detection

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Dark Channel
Prior
&
Smoke
Detection

Fazit

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Hasta
Luego

Thema Verfehlt