

# Pressurized intraperitoneal aerosol chemotherapy (PIPAC), a new surgical technique for the treatment of unresectable peritoneal carcinomatosis.

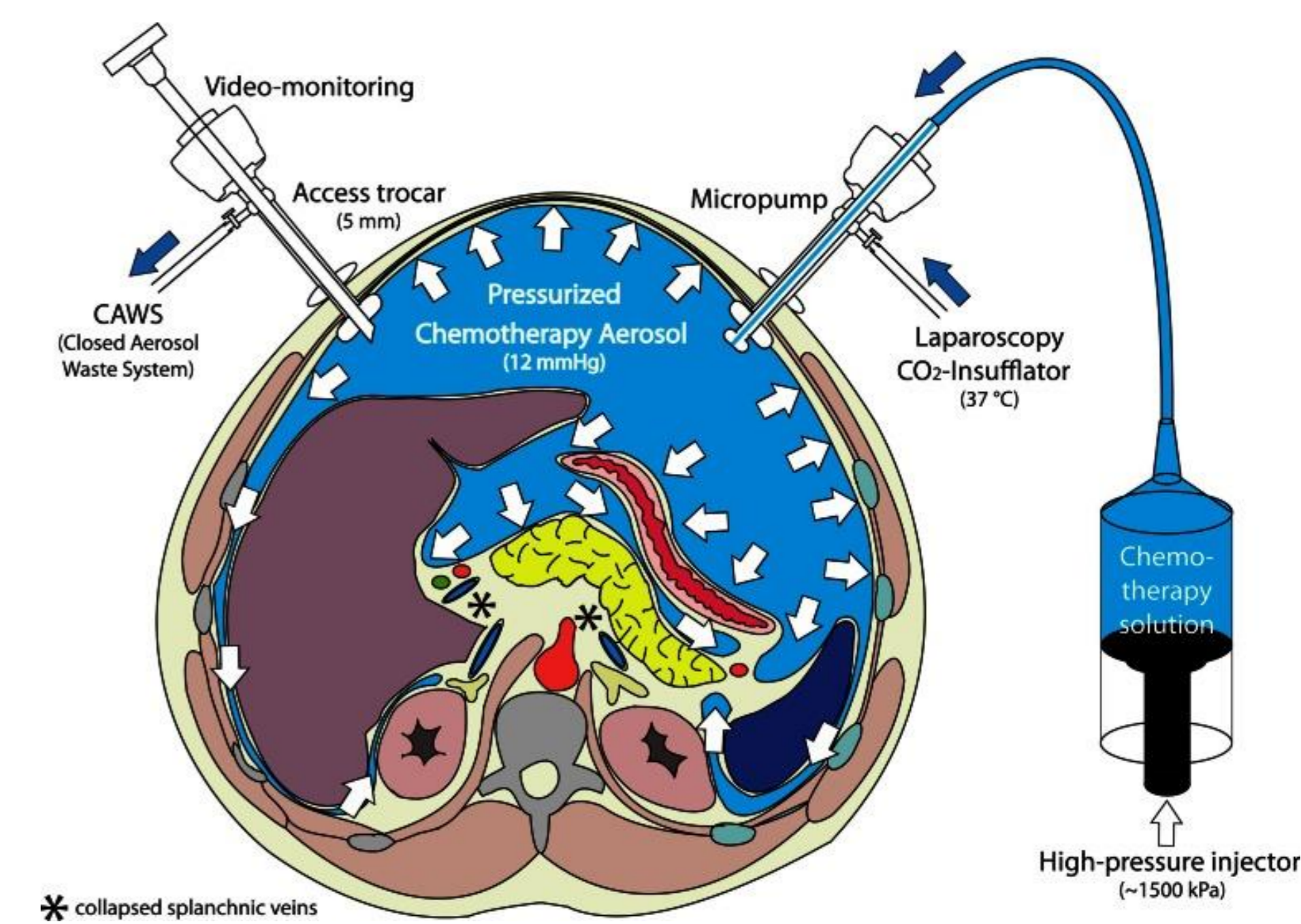
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## Background

Patients with unresectable peritoneal carcinomatosis treated with systemic chemotherapeutics have a bad prognosis. Pressurized intraperitoneal aerosol chemotherapy (PIPAC) can be a valuable adjunct. PIPAC is a minimally invasive and repeatable technique to deliver chemotherapeutic drugs into the peritoneal cavity. We report about the practical organization and implementation of this technique, its indications and its impact on patients' early postoperative recovery.

## Methods

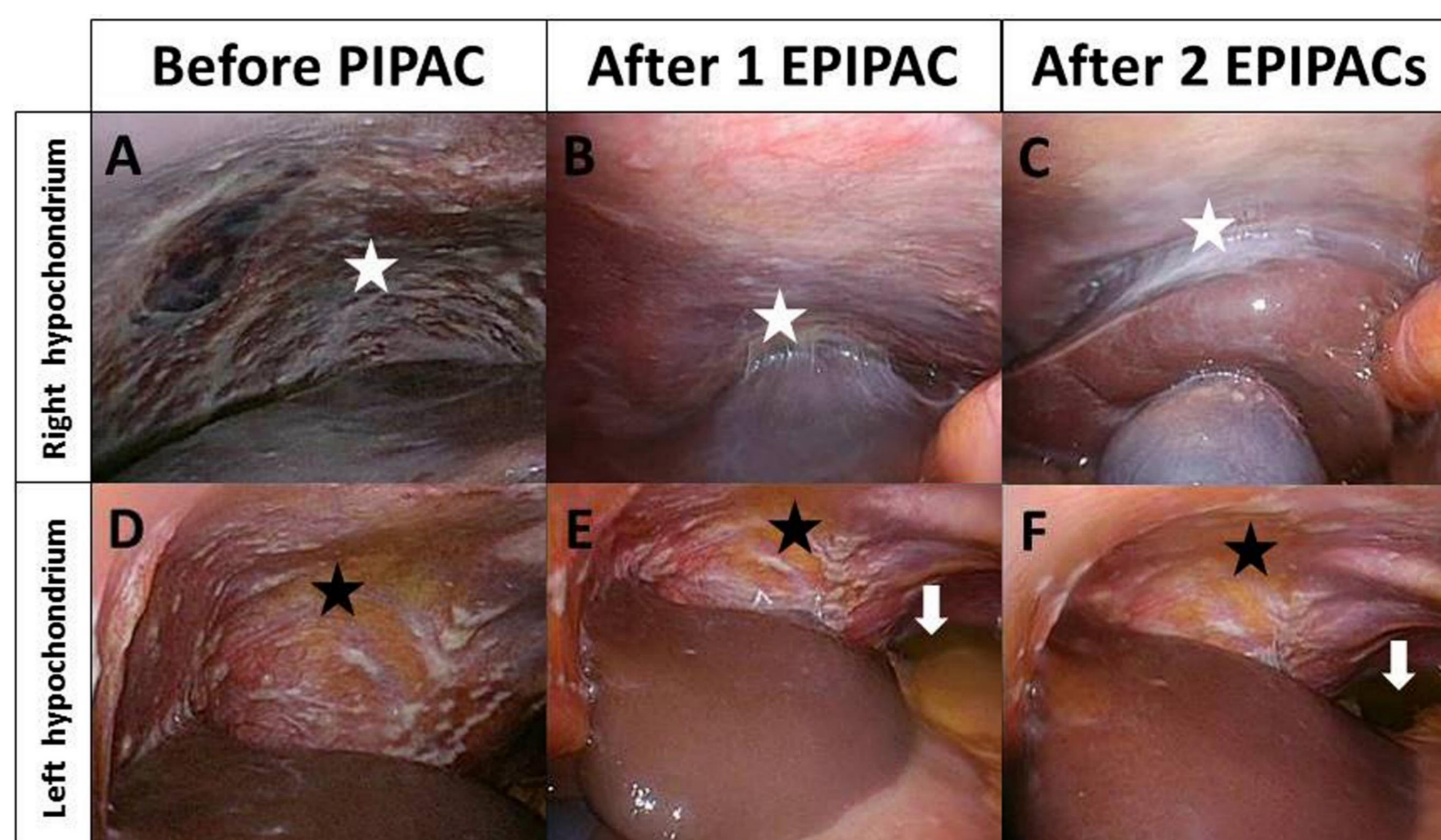
Every practical step until the first procedure was retrospectively reviewed together with the indications to perform this technique, the number of procedures in each patient and the early postoperative recovery.



PIPAC technique (Solass *et al.*, 2014)

## Results

### Safety measures: standard operating procedures strictly implemented!



**Effect of Electrostatic Precipitation (E)PIPAC on peritoneal carcinomatosis in a patient with MANEC**  
Diffuse peritoneal carcinomatosis (white star) in the right hypochondrium before EPIPAC (A). Gradual blurring of peritoneal carcinomatosis and development of adhesions between the right liver lobe and peritoneum of the right diaphragmatic dome (white star) during consecutive EPIPACs (B,C). Peritoneal carcinomatosis at the left diaphragmatic dome (black star) remains stable after 2 EPIPACs, but ascites appears in the left hypochondrium (white arrow) (D,E,F).

### PIPACs at Ghent University Hospital\*

Tumor	Number
Colon adenocarcinoma	7
Gastric adenocarcinoma	6
Serous ovarian carcinoma	3
Esophageal adenocarcinoma	2
Gall bladder carcinoma	1
Ductal breast carcinoma	1
Mesothelioma	1
Small bowel adenocarcinoma	1
MANEC	1
LAMN	1
CUP	1

\* Data collected over a period of 13 months: 49 procedures in 25 patients (9 patients underwent 3 procedures, 6 patients underwent 2 procedures, 10 patients underwent 1 procedure). Surgeries occurred uneventful. Concomitant chemotherapy: n = 11; Laparotomy: n = 4

### Postoperative recovery

Mainly uneventful:

- Local pain
- Subileus
- Nausea
- CRP increase (2-3 days postop: 100-150 mg/l)
- Fever

One patient developed toxic inflammation of the abdominal wall (which was successfully treated with antibiotics)

### Indications for PIPAC

- Not eligible for cytoreductive surgery + HIPEC
- Palliative systemic chemotherapy relapse or non-responders

### Air contamination?

Air sampling in the operating room during 2 PIPAC procedures

Platinum concentrations were not increased

## Conclusion

PIPAC is a new surgical procedure for the treatment of unresectable peritoneal carcinomatosis. This technique is safe for the surgical team under controlled circumstances. Its practical implementation requires extensive teamwork. The impact of this chemotherapeutic procedure on patients' postoperative recovery is limited. In the near future, we will start with an experimental study on PIPAC.