ANALYSIS OF THE DEVELOPMENT OF ACUTE KIDNEY INJURY (AKI) AFTER ENHANCED RECOVERY SURGERY (ERAS) PROTOCOL.

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GOAL OF STUDY:

Clinical trials have demonstrated a reduction in non-surgical complications following restrictive fluid therapy, so those and ERAS programs recommend the use of gold directed fluid therapy (GDFT) and restrictive fluid therapy. Its opponents suggest a possible predisposition to AKI development. The objective is to analyze AKI development in patients submitted to ERAS protocol in colorectal surgery in our center, and compare them to a historic cohort who followed standard care before ERAS implantation.

MATERIALS AND METHODS:

We compared two groups:

- **ERAS group (prospective):** 167 patients between January and November 2017 submitted to ERAS protocol with restrictive fluid therapy: 3ml/kg/h for laparoscopic surgery and 5ml/kg/h for open surgery. No maintenance fluid if tolerance is achieved.
- **Non-ERAS group (retrospective):** 66 patients between July and October 2015 following standard care with liberal intraoperative fluid and maintenance fluid in postoperative.

AKI is defined by the AKIN (Acute Kidney Injury Network) as an increase of ≥ 0.3 mg/dl in creatinine levels. We analyzed the incidence of AKI on each period comparing baseline creatinine with 24h post-op creatinine. Then we analyzed some risk factors for AKI development in both groups such as type of surgery, masculine sex, high blood pressure, DM, smoking status and the incidence of anemia

Figure 1: Fluid therapy algorithm in colorectal surgery

RESULTS AND DISCUSSION:

In the retrospective group baseline creatinine was 0.95 ± 0.23 and 15.4% patients developed AKI. In the ERAS group baseline creatinine was 0.84 ± 0.25 and 7.4% patients developed AKI. In the retrospective group 63.6% were men, 54.5% had HBP, 9.1% DM, 18.2% were smokers, and 27.3% were anemic on surgery day. In the ERAS group 76.9% were men, 69.2% had HBP, 15.3% DM, 38.5% were smokers, and 30.2% developed AKI despite anemic pre-surgery treatment.

P= 0.061 for less AKI with ERAS fluid therapy protocol

	PRE-ERAS AKI 15.4%	ERAS AKI 7.4%
Baseline Cr	0.95 ± 0.23	0.84 ± 0.25
Sex	63.3% men	76.9% men
HBP	54.5%	69.2% HBP
DM	9.1%	15.3%
smokers	18.2%	38.5%
Anemia	27.3% anaemic on day of surgery	30.2% anaemia treatment pre surgery

CONCLUSIONS:

Restrictive fluid therapy in an ERAS program is not related to an increase in post-op creatinine, and to AKI development. Evenmore, it relates to a decrease of AKI development during post-op.

SOURCES:

- Enhanced recovery protocols for colorectal surgery and postoperative renal function: a retrospective review
- National Kidney Foundation