Table 2: Mean(SEM) values of the parameters in all groups

Groups	Group I	Group 2	Group 3	Group 4
No of nonsurvivors	2	1	1	3
Bursting Pressure (mmHg)	200 (5.00)	176.6 (2.30)	205 (15.23)	198.6 (2.19)
Hydroxyproline level (μg/mg)	1.74 (0.19)	1.63 (0.27)	1.91 (0.40)	2.52 (0.40)
Inflammation	2.6 (0.5)	4 (0)	3.5 (0.7)	3.8 (0.4)
Neovascularization	2 (0)	1.6 (0.5)	3.8 (0.4)	2.6 (0.5)
Fibroblast ingrowth	4 (0)	1.8 (0.8)	4.(0)	3.8 (0.4)
Collagen Deposition	2 (0)	1.8 (0.4)	2.6 (0.5)	2.6 80.5)

In spite of this, EPO did not have a significant effect on anastomosis which was performed without obstruction in respect to fibroblast proliferation.

Although the storage of collagen was equal and higher in groups in which EPO was given (Group III and Group IV), when compared to the control group, there was no significant difference **($p > 0.05$)**. In contrast, when Group III and Group IV were compared with Group II which had the lowest storage of collagen, the difference was significant **($p = 0.02$)**. In this case, it was observed that the decreased storage of collagen after resection increased positively with the administration of EPO and it was significant in the obstruction group.

Discussion and conclusions

Insufficiency of intestinal anastomosis remains the most important cause of morbidity and mortality after gastrointestinal tract surgery. Despite the increased risk of leakage after emergency procedure at all sides of the intestine, the occurrence of anastomotic leakage appears more frequently during colonic operations with high morbidity and mortality.

Various factors have been shown to effect healing of anastomosis [1-3].

One of the growth factors thought to have a positive effect on the wound healing process is erythropoietin which is a haematopoietic growth factor. Erythropoietin(EPO) is a glycoprotein with a true hormonal structure which is located in the alpha-globulin fraction of the plasma and has a molecular weight of 46.000 kilodaltons. Like growth hormone(GH), it is also a member of the hematopoietic super family which consists of GH, EPO, granulocyte and macrophage colony-stimulating factor, interleukin 3 [IL-3], IL-4, IL-6, IL-7. All of them have similarities in their receptor structure [16,17]. It is likely that cross-reactivity between certain growth factors may exist. EPO is produced mainly in the kidneys and to a lesser extent in the liver [18]. Circulating EPO binds to EPO receptors on the surface of erythroid progenitors resulting in the replication and maturation to functional erythrocytes [19]. In studies, its receptors have also been found in the kidneys, liver, brain, the intestines, bone marrow and cardiomyosites [5-10,20,21]. It also shows an anabolic effect on wound healing by affecting other growth factor receptors thus increasing fibroblast proliferation, collagen deposition, endothelial cell proliferation (angiogenesis) and the manufacture of extracellular matrixes. It also has a trophic affect on gastrointestinal growth and development and increases cell turnover and cell migration [8]. Recombinant EPO has also been used in patients awaiting elective surgery to increase their packed red blood cell volume [22].

In an experimental study which was done by Fatouros that examines the effect of EPO on colonic anastomose healing, it has been established that, among the rats which were given EPO for 15 days preoperatively and 7 days postoperatively, the breaking strength of primary left colonic anastomosis increased by 37% [9,10]. In histological examination on the anostomotic area, a smaller number of inflammatory cells have been observed in the EPO group, when compared to the control group. Despite this, more fibroblast reaction and angiogenesis was observed in the EPO group when compared to the control group.

In order to investigate the effect of EPO on wound healing in resection and anastomosis after colonic obstruction, a new group was added and EPO administration was applied for 7 days postoperatively. The healing of anastomosis was evaluated by using mechanical bursting pressure measurement, the tissue hydroxyproline level, and the collagen storage score during histological examination.

Although tissue hydroxyproline and bursting pressure levels in Group III were both higher than the control group no significant difference was found in groups without obstruction. Using these results we might say that EPO could have positive beneficial effects after primary left colonic anastomosis however, in comparison to Fatouros' study this improvement was not significant.

The results of the histological evaluation show that the histological inflammation score of the groups in which