In spite of a recent sceptical report [7], a beneficial effect of varicocele operation – commonly referred to as high ligation – on semen quality in patients with a varicocele appears to be established [for review see 4, 11]. The question of whether the postoperative improvement of sperm count is mirrored by a corresponding change of FSH has been studied by Schiff et al. [9]. They measured FSH as well as LH and testosterone in five patients with a varicocele and reduced semen quality prior to and 3 months following high ligation [9]. While there was a postoperative improvement in semen quality, no change was seen postoperatively for FSH, LH, and testosterone before and after stimulation with GnRH. However, the data of Schiff et al. [9] appear somewhat provisional due to the small number of patients and the relatively short time interval between operation and postoperative endocrine evaluation.

Eighteen patients (age 22–47 years, mean 32 years) with a left-sided clinical varicocele and reduced semen quality underwent high ligation of the left internal spermatic vein [technique of Bernardi (1)]. Shortly before and at different time intervals after the operation (mean 8.8 months, range 3–17 months), FSH, LH, and testosterone were measured in plasma prior to and following intravenous injection of 100 μg GnRH. The methods for the hormone assays have been reported previously [6]. Semen analyses [5] were performed simultaneously with the hormone determinations. For statistical analysis, the Wilcoxon matched-pairs signed-ranks test [10] was employed.

There was almost no difference between the pre- and the postoperative values of FSH (Fig. 1). In contrast, LH (Fig. 2) was significantly higher after operation both before \( (P < 0.05) \) and following \( (P < 0.01) \) stimulation with GnRH. The values of testosterone showed a tendency to prestimulatory lower values after operation and were significantly lower \( (P < 0.05) \) 180 min following stimulation with GnRH (Fig. 3). No change was seen postoperatively for any of the seminal parameters.

Our results confirm the findings of Schiff et al. [9] for FSH, showing no change following operation. Semen quality, on the other hand, improved in the patients of Schiff et al. [9] but not in our patients. The lack of a postoperative change in FSH for our patients corresponds well with the lack of improvement in semen quality. This cannot be said from the data of Schiff et al. in which a reactive decrease of (poststimulatory elevated) FSH would have been consistent with the improvement of sperm count. The simultaneous postoperative decrease of testosterone and in-

1 Kindly donated by Hoechst AG
increase of LH in our patients present an unexpected finding and contrast with the lack of change found by Schiff et al. [9]. Do the postoperative rise of LH and fall of testosterone reflect – or perhaps cause – the nonrespondence of semen quality to high ligation in our patients? Rodriguez-Rigau et al. [8] recently suggested an indirect action of varicocele on spermatogenesis mediated via depressed testosterone production due to impaired Leydig cell function. But why then should high ligation adversely affect Leydig cell function and, consequently, testosterone production in our patients?

Comhaire and Vermeulen [2] reported a postoperative increase of basal values of testosterone in 10 patients with a clinical varicocele. However, preoperative testosterone levels were low in these ten patients [2] while they were “normal” in our 18 patients.

Our results, apparently, pose more questions than they answer. If we assume a – possibly transient – impairment of Leydig cell function by high ligation, the increase of LH could be explained as a reaction of upper centers to the decreased testosterone production. As a result of the elevated LH, new Leydig cells could originate (neogenesis of Leydig cells, [3]) and eventually normalize the testosterone production at a later point in time. Sufficient testosterone levels, in turn, would create