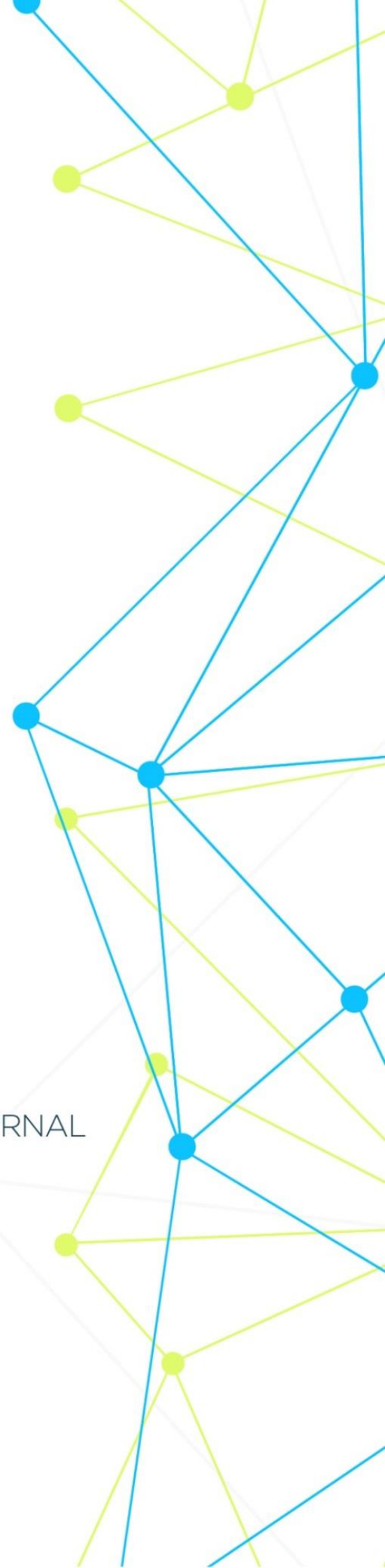


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ASSESSMENT OF THE QUALITY OF LIFE IN CHILDREN AFTER SURGICAL TREATMENT OF HIRSHPRUNG DISEASE

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Abstract. The article presents the results of studying the quality of life and functional activity of children with Hirschsprung's disease who underwent surgical treatment according to the classical Soave-Lenyushkin method and the improved De La Torre-Ortega method. The quality of life of children undergoing surgical treatment was assessed using the adapted PedsQL™4.0 scale; consisting of 21 questions assessing physical, emotional, social and role functions. And the analysis of the quality of life of children with Hirschsprung's disease revealed a significant increase in indicators on all scales when using the improved technique of the De La Torre-Ortega operation up to 84.1-92.3% in relation to the group of healthy children with a change in the total score from 52.8 ± 10.0 to 70.4 ± 6.4 ($t=6.79$; $p<0.001$).

Keywords: Hirschsprung's disease, quality of life, functional activity, children.

Relevance. Hirschsprung's disease is a fairly common disease, it should be noted that the incidence of Hirschsprung's disease, according to TJ Bradnock [1], has been ranging from 1:30,000 to 1:2,000 in the total number of newborns for several decades. According to average estimates, the incidence of Hirschsprung's disease worldwide is approximately 1 case per 5000 live births. In the overwhelming majority of cases, the symptoms of this pathology appear already in the neonatal period or in early infancy [1]. The most optimal treatment for HD is early radical intervention with resection of the aganglionic zone.

Today, in the treatment of Hirschsprung's disease, radical one-stage surgical treatment using minimally invasive surgical methods is becoming more common. Modern methods of surgical treatment of Hirschsprung's disease in newborns and young children help to improve outcomes and reduce mortality.

Currently, transanal resection is one of the most commonly used treatments for HD worldwide. This method has undergone some technical changes over the past decades. However, as before, these methods are associated with many potential complications, which are often the cause of irreversible deterioration in the functional outcome and tangible social restrictions [1]. The most popular are the transanal methods Soave and Swenson [7]. The introduction of these methods of surgical intervention has reduced the duration of hospitalization and reduced the number of postoperative complications. However, even with their most effective and successful application, there is a risk of developing various complications [2].

In 1998, De la Torre, using simultaneous transanal endorectal resection of the large intestine for the surgical treatment of Hirschsprung's disease, leveled the use of laparotomy [3]. However, the use of this method of surgical intervention in total and subtotal forms of Hirschsprung's disease is not possible.

Recently, laparoscopic HD surgery has become the most widespread. However, as with traditional methods of treatment, this type of surgical intervention also has the following negative factors: the likelihood of developing postoperative complications in the form of constipation (7.1-22.2%) and infection (8.9-14.8%) [6].

In recent years, the quality of life of patients with various diseases, the effectiveness of their treatment and rehabilitation have been studied [4]. When evaluating the results of surgical treatment of Hirschsprung's disease, the study of one of the aspects of the quality of life - the vital signs - is of key importance.

Purpose of the study. To study the indicators of functional activity and quality of life in children with Hirschsprung's disease operated on by the De La Torre-Ortega method.

Material and research methods. The study included 21 children who underwent surgery for Hirschsprung's disease in the clinical bases of the Department of Pediatric Surgery of the Andijan State Medical Institute. The age of the patients ranged from 2 to 18 years. 4 (19.04%) patients were admitted to the clinic in the stage of decompensation, 12 (57.14%) - in the stage of subcompensation, 5 (23.8%) - in the stage of compensation. 13 (61.9%) children were operated on using the improved De La Torre-Ortega technique, and in 8 (38.1%) patients, transanal resection of the large intestine was performed according to the classical Soave-Lenyushkin technique.

In the course of studying the quality of life, children with Hirschsprung's disease and their parents filled out children's and parental forms of the PedsQL™4.0 questionnaire translated into Uzbek; before surgery and 1 year after surgery [4, 5]. The study included children from the age of two (the minimum age for assessing the quality of life). Given the small number of respondents, the results of the survey of children of different ages were summarized, respectively, the answers of parents were also generalized. Healthy children in the amount of 15 people were subjected to a survey for comparative evaluation.

The questionnaire consisted of 21 questions and is represented by the following scales:

- physical functioning (FF) - 8 questions,
- emotional functioning (EF) - 5 questions,
- social functioning (SF) - 5 questions,
- role functioning (RF) - functioning in kindergarten (FDS) or school functioning (SF) - 3 questions (based on the age of children).

1. Physical functioning (Physical Functioning - PF) , reflecting the degree to which the physical condition limits the performance of physical activities (walking, carrying heavy loads, climbing stairs, self-service, etc.).

2. Emotional functioning (Role-Emotional - RE) involves assessing the degree to which the emotional state interferes with the performance of work or other daily

activities (including spending more time, reducing the volume of work, reducing its quality).

3. Social functioning (Social Functioning - SF), is determined by the degree to which the physical or emotional state limits social activity (communication).

4. Role-Physical Functioning (RP) - the impact of physical condition on daily role-playing activities (work, daily duties). The questionnaire has blocks for age groups: 5-7, 8-12 and 13-18 years old, with forms for children and parents to fill in, and a block for children 2-4 years old (filled in only by parents). Parents and the child were asked to choose one of the proposed answers to each question in the appropriate (child and parent) form of the questionnaire. For children under 5 years of age, parents answered questions, from 5 years of age - the children themselves. The total number of points for all modules is calculated on a 100-point scale after the scaling procedure: the higher the final value, the better the child's quality of life.

The statistical significance of the obtained measurements when comparing the average values was determined by the Student's t-test (t) with the calculation of the error probability (P) when checking the normality of the distribution (by the kurtosis criterion) and the equality of general variances (F - Fisher's criterion). Significance level $P < 0.05$ was taken as statistically significant changes.

Results of the study and their discussion. When comparing the quality-of-life indicators in the group of healthy children and in the main group before surgery (Table 1), the total score (OB) in the main group before surgery (d/o) was 52.8 ± 10.0 ($t=9.61$, $p < 0.001$), while in healthy children this indicator varied within 79.6 ± 6.7 .

Table 1.

Quality of life indicators in the group of healthy children and in the main group before surgery

| Scale | Standard values (n=15) | Main group - n/a (n=21) | t | |
|----------------------------|------------------------|-------------------------|---------|--------|
| | | | Meaning | R |
| Physical Functioning (FF) | 84.3±9.2 | 52.9 ± 11.9 | 8.93 | <0.001 |
| Emotional Functioning (EF) | 76.7±10.1 | 54.3±11.0 | 6.31 | <0.001 |
| Social Functioning (SF) | 83.3±7.2 | 51.7±10.6 | 10.62 | <0.001 |
| Role functioning (RF) | 74.0±8.3 | 52.4±8.7 | 7.54 | <0.001 |
| Total score (average) (OB) | 79.6±6.7 | 52.8±10.0 | 9.61 | <0.001 |

When comparing the quality-of-life indicators in the study groups after a 12-month period after surgery, the results changed with positive dynamics (Table 2.).

Table 2.

Quality of life indicators in the compared groups after 12 months after surgery

| Scale | Main group - p/o (n=21) | t is normal | | Comparison group - p/o (n=15) | t is normal | | t between groups | |
|---------------------------|-------------------------|-------------|--------|-------------------------------|-------------|--------|------------------|--------|
| | | Meaning | R | | Meaning | R | Meaning | R |
| Physical Functioning (FF) | 71.0±8.6 | 4.41 | <0.001 | 64.7±7.2 | 6.51 | <0.001 | -2.38 | <0.001 |
| Emotional | 69.3±7.6 | 2.38 | <0.05 | 64.3±5.9 | 4.07 | <0.001 | -2.19 | <0.05 |

| | | | | | | | | |
|----------------------------|----------|------|--------|----------|------|--------|-------|--------|
| Functioning (EF) | | | | | | 1 | | |
| Social Functioning (SF) | 72.9±6.4 | 4.48 | <0.001 | 65.7±8.6 | 6.07 | <0.001 | -2.73 | <0.01 |
| Role functioning (RF) | 68.3±6.0 | 2.26 | <0.05 | 62.7±5.0 | 4.55 | <0.001 | -3.10 | <0.001 |
| Total score (average) (OB) | 70.4±6.4 | 4.15 | <0.001 | 64.3±4.4 | 7.39 | <0.001 | -3.37 | <0.001 |

Further, the indicators of FF, EF, SF, RF and OB in all patients of the main group improved significantly. In particular, FF in the main group after surgery was 71.0±8.6 (t=4.41; P<0.001), in the comparison group - 64.7±7.2 (t=6.51; P<0.001).

In Fig.1. the dynamics of the quality-of-life index in the main group before and 12 months after surgery in children with HD is presented. Quality of life indicators in the main group in children with HD improved: SF by 1.4 times (from 51.7% to 72.9%) (t = 7.81; p <0.001), FF by 1.3 times (from 52.9% to 71.0%) (t=5.65; p <0.001), EF (from 54.3% to 69.3%) (t =5.14; p <0.001) and RF (from 52.4% to 68.3%) (t =6.90; p <0.001), and the OB increased from 52.8% to 70.4% (t=6.79; p <0.001).

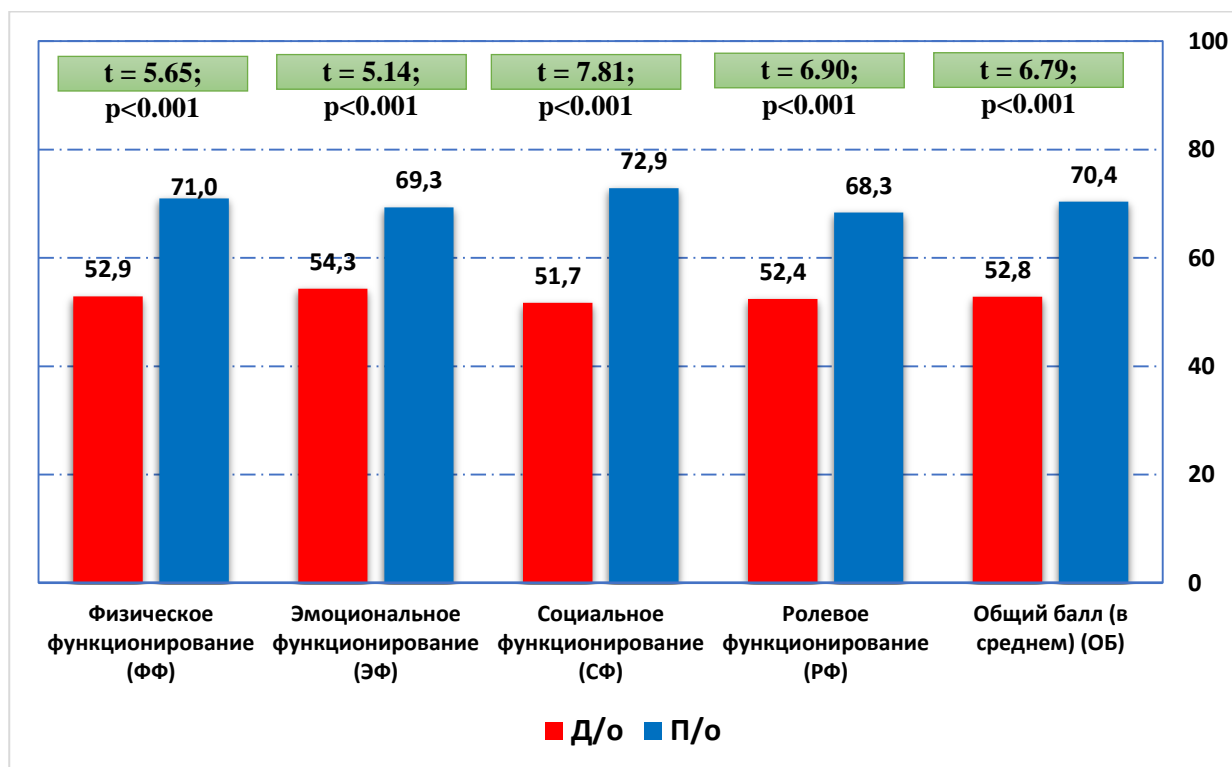


Fig. 1. Dynamics of the quality-of-life index in the main group before and after 12 months after surgery

A more illustrative picture of the ratio of **quality-of-life** indicators in the comparison groups after a 12-month period after surgery to healthy children can be seen in the diagram in Fig. 2.

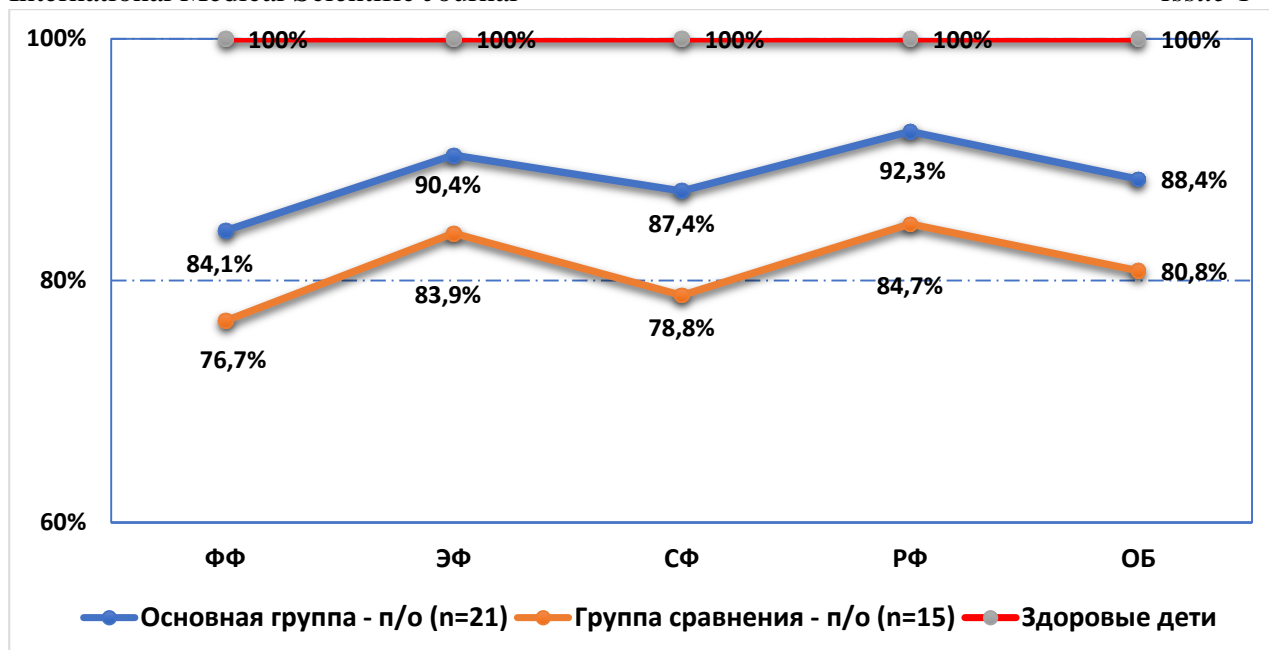


Fig. 2. The ratio of quality-of-life indicators in the comparison groups after a 12-month period after surgery to healthy children

Thus, the ratio of quality-of-life indicators in children with HD in the postoperative period to healthy children is minimal in terms of "role functioning" (92.3%), "emotional functioning" (90.4%) and "total score" (88.4 %) respectively.

Thus, the analysis of the quality of life of children with Hirschsprung's disease revealed a significant increase in indicators on all scales a year after surgical treatment, while using the improved technique of the De La Torre-Ortega operation, the degree of improvement was higher ($p < 0.05$) (on average with 62.0-70.8% on all scales before surgery up to 84.1-92.3% in relation to the group of healthy children) with a change in the total score from 52.8 ± 10.0 to 70.4 ± 6.4 ($t = 6.79$; $p < 0.001$), in turn, transanal resection of the large intestine according to the classical method of Soave-Lenyushkin made it possible to achieve compliance in relation to the group of healthy children at an average level of 76.7-84.7%, with an increase in the indicator total score only up to 64.3 ± 4.4 .

The use of the modified method of the De La Torre-Ortega operation in children with Hirschsprung's disease contributed to the improvement of all the main parameters for assessing the quality of the course of the immediate postoperative period ($p < 0.05$ - comparing the duration of anesthesia, the start of enteral nutrition and the timing of activation of patients, recovery of peristalsis), as well as reducing the period of hospitalization from 22.1 ± 3.2 to 15.1 ± 5.2 days ($t = 7.23$; $p < 0.001$) and the overall complication rate from 63.8% to 31.6% ($\chi^2 = 8.743$; $Df = 1$; $p = 0.004$).

Modernization of the tactical and technical aspects of the surgical treatment of children with Hirschsprung's disease in conjunction with a comprehensive program of postoperative rehabilitation made it possible to improve functional results, the value of which to a greater extent corresponded to the normative indicators in healthy children.

Conclusions.

1. During the observation period up to 12 months after surgical treatment of children with Hirschsprung's disease in the main group, the frequency of functional organic complications decreased (constipation, encopresis, anal canal stenosis) from 40.4% to 18.4% ($\chi^2 = 4.792$; $Df = 1$; $P = 0.029$), which generally helped increase the proportion of good results from 46.8% to 73.7% ($\chi^2 = 7.046$; $Df = 2$; $P = 0.030$).

2. The analysis of the quality of life of children with Hirschsprung's disease revealed a significant increase in indicators on all scales one year after surgical treatment, while the degree of improvement was higher ($p < 0.05$) when using the improved technique of the De La Torre-Ortega operation (on average, with 62.0-70.8% on all scales before surgery up to 84.1-92.3% in relation to the group of healthy children) with a change in the total score from 52.8 ± 10.0 to 70.4 ± 6.4 ($t = 6.79$; $p < 0.001$), along with this, transanal resection of the large intestine according to the classical method of Soave-Lenyushkin made it possible to achieve compliance with the group of healthy children at an average level of 76.7-84.7% with an increase in the total score only up to 64.3 ± 4.4 .

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