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ТИББИЁТДА ЯНГИ КУН НОВЫЙ ДЕНЬ В МЕДИЦИНЕ NEW DAY IN MEDICINE

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TUBOPERITONEAL INFERTILITY: POSSIBILITIES OF RESTORING REPRODUCTIVE FUNCTION

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✓ Resume

Relevance. The article discusses the issue of restoring fertility in patients with blocked fallopian tubes, particularly in cases where the tube is occluded at the distal end. The authors highlight the importance of laparoscopy as a potential solution to achieve this goal, and discuss the role of adhesions in the pelvic region, which can significantly impact the effectiveness of surgical treatment. They also emphasize the importance of reducing inflammation and promoting tissue regeneration through careful surgical techniques and minimization of burn surfaces, as well as the use of IVF methods to overcome infertility issues

Keywords: infertility, female infertility, laparoscopic treatment, tubal patency assessment, endometriosis, fallopian tubes, salpingo-ovariolytic, salpingostomy, fimbrioplasty, IVF, assisted reproduction, adhesions, inflammation, tissue regeneration, stem cells, mesenchymal cells

ТРУБНО-ПЕРИТОНЕАЛЬНОЕ БЕСПЛОДИЕ: ВОЗМОЖНОСТИ ВОССТАНОВЛЕНИЯ РЕПРОДУКТИВНОЙ ФУНКЦИИ

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✓ Резюме

Актуальность. В статье рассматривается вопрос восстановления фертильности у пациенток с непроходимостью маточных труб, особенно в тех случаях, когда труба закупорена на дистальном конце. Авторы подчеркивают важность лапароскопии как потенциального решения для достижения этой цели и обсуждают роль спаек в области малого таза, которые могут существенно повлиять на эффективность хирургического лечения. Они также подчеркивают важность уменьшения воспаления и стимулирования регенерации тканей с помощью тщательных хирургических методов и минимизации ожоговых поверхностей, а также использования методов ЭКО для решения проблем бесплодия

Ключевые слова: бесплодие, женское бесплодие, лапароскопическое лечение, оценка проходимости маточных труб, эндометриоз, фаллопиевы трубы, сальпингоовариолиз, сальпингостомия, фимбриопластика, ЭКО, вспомогательная репродукция, спайки, воспаление, регенерация тканей, стволовые клетки, мезенхимальные клетки

TRUBAL-PERITONEAL BEPUSHTLIK: REPRODUKTIV FUNKSIYANI TIKLASH IMKONIYATLARI

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✓ **Rezyume**

Mavzuning dolzarbligi. Maqolada, ayniqsa, distal uchida naycha tiqilib qolgan hollarda, bachadon naychalari obstruksiya bo'lgan bemorlarda tug'ilishni tiklash masalasi ko'rib chiqiladi. Mualliflar laparoskopiyani ushbu maqsadga erishish uchun potensial yechim sifatida muhimligini ta'kidlaydilar va jarrohlik davolash samaradorligiga sezilarli ta'sir ko'rsatishi mumkin bo'lgan to's bo'shlig'idagi bitishmalarining rolini muhokama qiladilar. Shuningdek, ular yallig'lanishni kamaytirish va ehtiyotkorlik bilan jarrohlik usullari va kuyish yuzalarini minimallashtirish orqali to'qimalarning yangilanishini rag'batlantirish va bepustlik muammolarini hal qilish uchun IVF usullaridan foydalanish muhimligini ta'kidlaydilar

Kalit so'zlar: bepustlik, ayollarning bepustligi, Laparoskopik davolash, fallop naychalarining o'tkazuvchanligini baholash, endometrioz, fallop naychalari, salpingoovarioliz, salpingostomiya, fimbrioplastika, IVF, yordamchi ko'payish, yopishqoqlik, yallig'lanish, to'qimalarning yangilanishi, ildiz hujayralari, mezenximal hujayralar

Relevance

For over two decades, infertility has remained a persistent issue, with the primary causes of female infertility being obstruction of fallopian tubes and external genital endometriosis. While the introduction of laparoscopic treatment and antibiotics has reduced the frequency of subsequent occlusion of fallopian tubes, endometriosis has emerged as a leading cause of infertility, and tubal patency assessment is now a common procedure for women under 35 with confirmed ovulation and normal sperm parameters. Before undergoing laparoscopy, minimally invasive tests such as hysterosalpingography and echohydrosonography are used to assess the condition of the fallopian tubes. Based on the test results, a decision is made on whether laparoscopy is necessary. However, for patients with a confirmed history of sexually transmitted infections, laparoscopy is recommended without the need for preliminary testing. Surgical procedures aimed at treating tubo-peritoneal infertility, such as salpingo-ovariolysis, salpingostomy, and fimbrioplastic surgery, aim to restore the fallopian tubes' functionality. However, with the widespread use of IVF methods, many surgeons now opt to remove severely damaged fallopian tubes and instead refer patients to IVF programs, effectively bypassing the need for surgical repair. The use of assisted reproduction methods and inductive technologies raises ethical and religious concerns, leading to some couples avoiding artificial insemination. Meanwhile, the issue of restoring fertility in patients with blocked fallopian tubes remains pressing, particularly in cases where the tube is occluded at the distal end, and laparoscopy is being evaluated as a potential solution to achieve this goal.

Materials and methods

The success of surgical treatment for tuboperitoneal infertility depends on various factors, including the patient's age, nature of uterine changes, severity of adhesions, and completeness of surgery. In this study, only patients under 35 years old were included, as this is a recommended age range in clinical guidelines for infertility management. However, the study's authors believe that the initial condition of the fallopian tubes and presence of adhesions in the pelvis are the most crucial factors determining the effectiveness of laparoscopy in restoring fertility.

The development of adhesions is facilitated by various factors, including the transfer of sexually transmitted infections, surgical interventions, and other factors. After surgery, many authors have shown an increase in the adhesive process, which is a multifactorial process involving molecular mechanisms [1; 2]. The pathogenesis of adhesions is triggered by damage to the peritoneum, leading to inflammation and the release of various mediators, such as histamine and kinins, which increase vessel permeability and attract immune cells [3]. Inflammation is a crucial part of the regenerative process, occurring in response to tissue damage. During this process, macrophages play a pivotal role in determining the effectiveness of the inflammatory phase, secreting growth factors and stimulating chemotaxis, which ultimately leads to the creation of a new phase - the repair phase, marked by the arrival of mesenchymal cells. In mammals, including humans, the restoration of damaged tissues is facilitated by the proliferation and differentiation of stem cells specific to the affected tissue. In addition, mesenchymal stem cells play a crucial role in replenishing all connective tissue throughout the body. Mesenchymal cells, including stem cells, fibroblasts, and myofibroblasts, play a key role in the healing process by producing collagen, particularly type III, which helps to remodel and replace granulation tissue with

permanent tissue. This remodeling of the extracellular matrix marks the transition from healing to regeneration, where the granulation tissue can be replaced with either fibrous tissue or fully functional tissue. In adults, tissue regeneration is typically limited to remodeling and repair, with complete restoration of tissue structure and function being extremely rare. Instead, adhesions may form as a result of a prolonged and intense injury process, combined with a genetic predisposition that hinders the body's ability to restore normal tissue function. Following a previous infection or surgery, the treatment of tubo-peritoneal infertility requires more aggressive surgical techniques, which can trigger inflammation and repair in the pelvis. For salpingostomy and fimbrioplasty, we recommend using cold scissors instead of monopolar energy, as it is more suitable for areas where new functional tissue needs to be created, such as creating a new opening in the fallopian tube funnel.

Results and discussions

The presence of rough adhesions can significantly impact the effectiveness of surgical treatment for infertility, particularly with laparoscopy. Our data shows that the procedure is less effective in overcoming infertility when there are rough adhesions, compared to milder adhesions (I-II degrees). After salpingo-ovarian lysis, spontaneous pregnancy is more likely to occur due to less severe damage to the fallopian tube, which requires less extensive tissue regeneration [4]. This is because the earlier stage of the operation involves destroying adhesions that formed as a result of acute inflammation, allowing for the restoration of the fallopian tube's functional ability [4]. Salpingostomy and fimbrioplasty are surgical procedures that aim to restore patency of the fallopian tube when it's blocked. These procedures rely on the natural ability of tissue to regenerate and differentiate, including the potential of stem cells, including mesenchymal and tissue-specific stem cells, to transform into new tissue [5]. To promote successful regeneration, it is essential to reduce inflammation by minimizing the burn surface, carefully controlling bleeding, and using antibacterial therapy during the peri- and postoperative periods. While regrowing the burned tissue itself is not feasible, it is possible to heal the wound by replacing it with fibrous tissue. In contrast, monopolar coagulation and dissection can quickly and efficiently dissect tissue without bleeding, making it a practical and effective method for surgical procedures. The use of cold chemicals and surgical scissors in tubal-peritoneal non-real infertility treatment can lead to good tissue vascularization, increasing the chances of regeneration and restoration of organ function. This approach should be combined with careful selection of instruments and energy sources, considering the classical dynamics of healing to achieve optimal treatment outcomes. It is reasonable to use monopolar energy for dissolving thin, flat adhesions during salpingo-ovariolysis, as it will not cause significant exudation or lead to the formation of new scar tissue. In patients undergoing laparoscopy and fallopian tube removal before IVF, we observed higher IVF success rates compared to those in the same period of time without this procedure. This is likely due to the elimination of the source of chronic infection, which supports the inflammatory response and prevents current implantation, ultimately leading to increased IVF efficiency. Research has consistently shown that the presence of hydrosalpinx is detrimental to IVF outcomes, as it negatively impacts pregnancy rates and increases the risk of spontaneous miscarriage. A 1998 meta-analysis found that IVF cycles in women with hydrosalpinx resulted in significantly lower implantation and pregnancy rates, approximately 50% lower than those in women without hydrosalpinx.

The toxic substances present in the hydrosalpinx are thought to have a detrimental impact on the reproductive process, specifically affecting the quality of gametes, embryos, and the ability of the endometrium to support implantation. Before undergoing IVF, it is possible to eliminate hydrosalpinx by removing the fallopian tube (salpingostomy), occluding the proximal part of the tube, or aspirating the contents of the hydrosalpinx with ultrasound guidance. This can be done laparoscopically or hysteroscopically, and may also be combined with sclerotherapy. A recent meta-analysis found that the outcome of IVF is comparable after tubectomy treatment, suggesting that eliminating hydrosalpinx without removing the fallopian tube is a viable option.

Conclusion

In conclusion, the study highlights the importance of laparoscopy in restoring fertility in patients with tubo-peritoneal infertility, particularly in cases where the fallopian tube is occluded at the distal end. The success of surgical treatment depends on various factors, including the patient's age, nature of uterine changes, severity of adhesions, and completeness of surgery. The study emphasizes the need to



minimize inflammation and promote tissue regeneration by using gentle surgical techniques and avoiding excessive tissue damage. Additionally, eliminating hydrosalpinx through laparoscopic or hysteroscopic procedures can improve IVF outcomes by reducing the toxic substances that negatively impact the reproductive process.

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