Benha Journal of Applied Sciences (BJAS) **print: ISSN 2356–9751**
Vol.(5) Issue(8) Part (2) (2020), (167-172) **online: ISSN 2356–976x**
http://bjas.journals.ekb.eg

Comparative Study between Traditional Method of Application of Lumbo–Peritoneal Shunt and Laparoscopic Assisted Method in Patients with Idiopathic Intracranial Hypertension

A.A.Salem, M.A.Mansour, H.M.Hamam, M.H.El-Tantawy and A.H.El-Sheikh
General Surgery Dept., Faculty of Medicine, Benha Univ., Benha, Egypt
E-Mail:Ahmed235@gmail.com

Abstract

The annual incidence of IIH is 1 to 2 per 100,000 population. There is a higher occurrence in large ladies between the ages of 15 and 44 years (4 to 21 for each 100,000). The point of the current examination was to look at our outcomes in arrangement of the stomach container of lumbo-peritoneal shunt utilizing customary technique and laparoscopic helped strategy in patient with idiopathic intracranial hypertension after disappointment of moderate treatment and rehashed lumbar penetrates. This examination incorporates 20 patients worked with smaller than usual laparotomy for addition of stomach end of the shunt technique and 20 patients worked with laparoscopic helped strategy tentatively and reflectively for treatment of idiopathic intracranial hypertension after disappointment of traditionalist treatment and rehashed lumbar penetrates. Full evaluation of the patients pre and post-employable got utilizing plain X-beams ,CTScans ,MRI ,Visual Fields and Fundus Examinations. Pace of Satisfaction was higher in Laparoscopic bunch than open gathering however with no factually critical . The mean Post-usable remain was altogether lower in Laparoscopic bunch than open gathering as The interim of medical procedure in Laparoscopic bunch was 1.35 ± 0.47 day and was 3.35 ± 1.52 day in open gathering ($p < .00001$). Likewise pace of Complications was essentially lower in Laparoscopic bunch than open gathering . There was a measurably critical distinction between the two gatherings as indicated by Need for rehashed medical procedures . laparoscopic situation of lumbarperitoneal shunts is a protected and solid method in keeping away from need for rehashed medical procedures ,intraoperative blood misfortune and clinic remain .It brings down the pace of postoperative inconveniences and the hour of medical procedure. It numerous preferences over the conventional minilaparotomy approach.

Keywords: Lumbo–Peritoneal Shunt, Laparoscopic Assisted Method, Idiopathic Intracranial Hypertension**.**

1. Introduction

Idiopathic intracranial hypertension (IIH) is a problem portrayed by expanded intracranial weight without radiological or lab proof of intracranial pathology. This condition ordinarily influences large ladies. The rate of IIH is expanding with the rising predominance of corpulence. The yearly frequency of IIH is 1 to 2 for every 100,000 populace. There is a higher rate in fat ladies between the ages of 15 and 44 years (4 to 21 for every 100,000). Determined cerebral pain is the most widely recognized side effect. Visual weakness is a genuine confusion that may not be perceived by the patients [1].

Lumbo-peritoneal shunts are broadly utilized for the treatment of patients determined to have IIH . catheter relocation out of the stomach hole is all the more usually saw in very big boned patients. Likewise, bigger and more profound cuts are needed for the arrangement of a distal catheter into the stomach cavity by laparotomy in such patients. Difficulties including wound recuperating issues, stomach torment, and expanded danger of an incisional hernia are likewise observed [2].

Laparoscopy-helped LP shunt position offers numerous points of interest over exemplary method of use of VP or LP shunts. It dodges open injuries on foremost stomach divider, empowers appropriate situating of the distal tip away from the omentum, gives an occasion to symptomatic laparoscopy and conceivable adhesiolysis in patients with different stomach medical procedures preceding the arrangement of the new shunt.If update become important, the distal tip of the shunt can without much of a stretch be recovered laparoscopically, taking out the requirement for an open strategy. The strategy should be possible in under 30 minutes by any rehearsing laparoscopist [3].

There are points of interest and impediments in considering laparoscopic-helped a medical procedure. On the off chance that it is conceivable to put the peritoneal catheter straightforwardly from the subcutaneous tissue into the peritoneal cavity without an overlying entry point, this ought to kill an intermittent complexity of withdrawal of the catheter from the peritoneum into the subcutaneous pocket , coincidental situation of the catheter in the preperitoneal fat space ought to in like manner be wiped out. laparoscopic representation and the capacity of lysis of grips is invaluable for distal shunt modification. laparoscopy conveys its own dangers, anyway low in frequency. Laparoscopic-helped shunt situation should be firmly viewed as in fitting cases [1].

A few investigations have demonstrated that utilizing laparoscopy in distal shunt methodology empowers situation of the stomach end of the shunt under vision and in an enlarged peritoneum dissimilar to the customary technique and bringing down the danger of prompt injury to stomach viscera and bringing down the occurrence of preperitoneal arrangement of the distal shunt end. The creators proposed that the fundamental purpose behind this is visual control of the catheter position and its capacity when helped by laparoscopy and suggest its utilization

in large patients or in the individuals who had recently gone through stomach a medical procedure [1, 4].

The point of the current examination was to look at our outcomes in position of the stomach container of lumbo-peritoneal shunt utilizing conventional technique and laparoscopic helped strategy in patient with idiopathic intracranial hypertension after disappointment of traditionalist treatment and rehashed lumbar punctures.

2. Patient and method

This study incorporates 20 patients worked with smaller than usual laparotomy for inclusion of stomach end of the shunt strategy and 20 patients worked with laparoscopic helped technique tentatively and reflectively for treatment of idiopathic intracranial hypertension after disappointment of moderate treatment and rehashed lumbar penetrates. This examination was directed in our branch of neurosurgery at Benha college medical clinic.

Full evaluation of the patients pre and post-employable acquired utilizing plain X-beams ,CTScans ,MRI, Visual Fields and Fundus Examinations

The cases were arbitrarily picked without advantage to sex , or weight, yet all offer the way that they experience the ill effects of Headaches,visual field deserts &papilledema that has been demonstrated to be credited to Idiopathic Intracranial Hypertension after disappointment of clinical treatment.

Information will gathered from the patients with respect to age, weight ,mid-region boundary, past stomach tasks, medical clinic remain, understanding fulfillment, event of complexities ,season of a medical procedure, blood misfortune during medical procedure, need for rehashed medical procedures.

3. Results

The mean time of open gathering was 32.15 ± 10.18years and was 36.55 ± 7.60 years in Laparoscopic gathering. The mean weigh of open gathering was 90.75 ± 12.68 kg and was 95.25 ± 11.73 kg in Laparoscopic gathering. The mean Abdominal boundary of open gathering was 121.2 ± 21.01 cm and was 122.35 ± 19.34 cm in Laparoscopic gathering. The pace of Previous stomach a medical procedure was higher in Laparoscopic bunch than open gathering.

As indicated by Preoperative paplledema, half of patient in the current investigation in the two gatherings progressed Grade III paplledema before medical procedure and about the other half progressed Grade IV paplledema before medical procedure and just 3 patient had optic decay

As per usable information in the two gatherings. The interim of medical procedure was essentially lower in Laparoscopic bunch than open gathering as The interim of medical procedure in Laparoscopic bunch was 1.33 ± 0.52 hour and was 2.58 ± 0.63 hour in open gathering ($p < .00001$). Blood loos during medical procedure was essentially lower in Laparoscopic bunch than open gathering ($p = 0.004$)

As per post-employable information in the two gatherings. The mean Post employable remain was altogether lower in Laparoscopic bunch than open gathering as The mean medical clinic remain in Laparoscopic bunch was 1.35 ± 0.47 day and was 3.35 ± 1.52 day in open gathering ($p < .00001$). Likewise pace of Complications was altogether lower in Laparoscopic bunch than open gathering ($p= 0.009$) .Complications found in the two gatherings were slippage of the peritoneal end which was the most well-known extraordinarily in the open gathering, which was found in 9 instances of the open gathering, and required stomach modification for these cases . CSF pimple development in the abdomin due to either malpositioning of the peritoneal of the catheter , which requird redundancy of the medical procedure to amend the stomach end and expulsion of the CSF growth from the abdomin ,this occurred in 2 instances of the open gathering .Shunt was found cutted in the back which requied evacuation of the old framework and inclusion of another one , this was found in one instance of each gathering .Malpositioning of the peritoneal end which required rehashed modifications in 4 instances of the open gathering. Slippage of the lumbar end in the back which required one time correction in one instance of the laparoscopic gathering. Persistant papilledema , non working framework and stomach widening were found in one instance of laparoscopic gathering , which required supplanting of the shunt with another one .

Pace of Satisfaction was higher in Laparoscopic bunch than open gathering yet with no factually critical ($p = 0.301$).Patient satisfacion was assessed at every medical procedure in the two gatherings .Rated as non fulfilled ,ineffectively fulfilled , fulfilled and very satsfied .

As indicated by Need for rehashed medical procedures, 8 patient in open gathering required re-try for once and 3 patients required rehashed medical procedures for multiple times and one patient for multiple times because of ingenuity of the manifestations lastly worked with VP shunt utilizing route. While in Laparoscopic gathering, Rate of rehashed medical procedures was lower, 2 patient required re-try for once , one of them the shunt was found cutted in the back . The other case , the lumbar end slipped from the back. One patient required rehashed medical procedures for multiple times as the patient indicated persistant papilledema ,non working shunt and stomach enlargement . There was a measurably critical distinction between the two gatherings as per Need for rehashed medical procedures ($p = 0.031$)

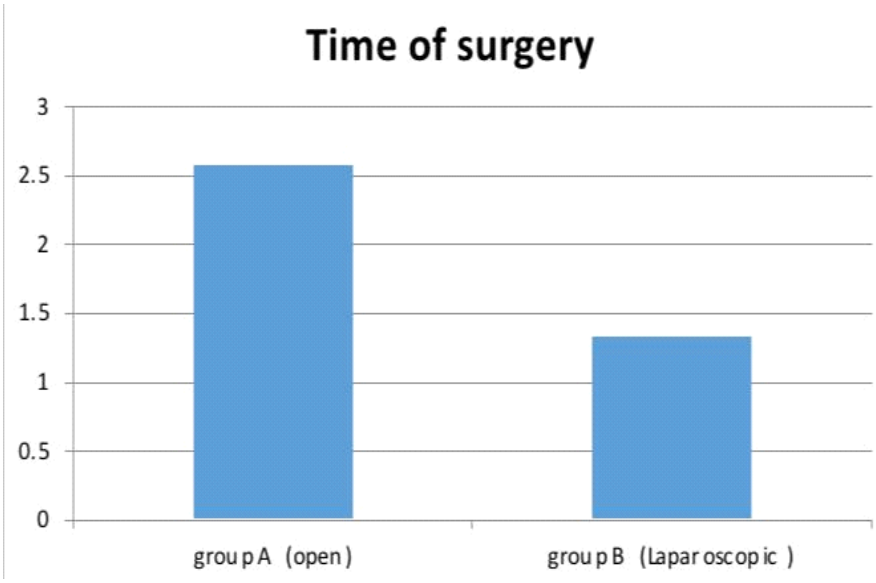

Fig (1) Time of surgery in both groups.

Table (1) Post-operative data in both groups.

post-operative data		open group	Laparoscopic group	t	p
Post operative stay		3.35 ± 1.52	1.35 ± 0.47	5.35	< .00001
Complications	Slippage of peritoneal end	9	0	15.24	0.009
	CSF cyst formation	2	0		
	Shunt was found cutted in the back	1	1		
	Malpostioning of peritoneal end	4	0		
	Persistant papilledema and abdominal distension	0	1		
	Slippage of lumbar catheter from the back	0	1		
Satisfaction	Not satisfied	3	1	3.64	0.301
	Poorly satisfied	4	2		
	Satisfied	9	8		
	Very satisfied	4	9		

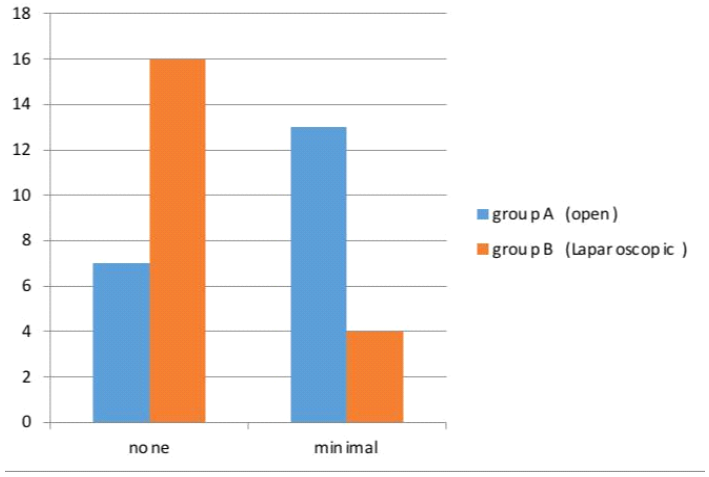

Fig (2) Intraoperative blood loss in both groups

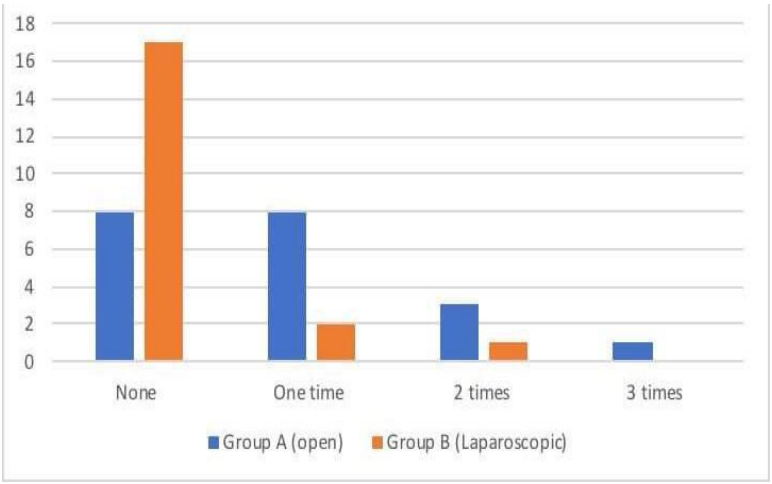

Fig (3) Need for repeated surgeries in both groups.

4. Discussion

Lumbarperitoneal shunts were first presented during the 1950s .These underlying shunts were related with spinal arachnoiditis and scoliosis thought to be because of the polyethylene material utilized in the production of the shunts. The frequency of arachnoiditis and scoliosis was radically decreased with the presentation of silastic catheters in 1975 .Despite this improvement, lumbarperitoneal shunts have huge confusions. Orthostatic hypotension can cause impairing migraines especially when valveless shunts are utilized. The shunts may likewise move out of the mid-region or spine. Likewise the shunt may get tainted and additionally hindered, especially at the peritoneal end [5].

A few gatherings have recently detailed the utilization of laparoscopy for peritoneal catheter inclusion starting in 1983 .Causha et al depicted their procedure of laparoscopic shunt addition utilizing a solitary survey port and a 10F speaker, albeit an extra port was needed now and again. Both ventriculoperitoneal and lumbarperitoneal shunts were embedded laparoscopically. This gathering likewise didn't discover past stomach a medical procedure to be a contraindication to regular laparoscopy [6].

Some discussion exists as to the maximum furthest reaches of CSF pressure with a conviction that body weight impacts cerebrospinal liquid weight levels. There is, nonetheless, no persuading proof for this conviction [7].

Patients with IIH are perpetually hefty, regularly grimly so.Obesity is a danger factor for the improvement of an incisional hernia.Even however more modest "little laparotomy" entry points are utilized for the conventional addition of lumbarperitoneal shunts this may not really diminish the rate of incisional hernias.

The point of the current investigation was to analyze our outcomes in situation of the stomach container of lumbo-peritoneal shunt utilizing conventional strategy and laparoscopic helped technique in patient with idiopathic intracranial hypertension after disappointment of traditionalist treatment and rehashed lumbar penetrates.

Our outcomes shows that the mean period of open gathering was 32.15 ±10.18 years and was 36.55 ±7.60 years in Laparoscopic gathering. The mean weigh of open gathering was 90.75 ±12.68 kg and was 95.25 ±11.73 kg in Laparoscopic gathering. The mean Abdominal periphery of open gathering was 121.2 ±21.01 cm and was 122.35 ± 19.34 cm in Laparoscopic gathering.

In Raysi et al., (8) concentrate as the normal age was 62.6 years (range 24–85). In Roth et al., [9] study , normal age was 60 years (range, 19-88). The normal weight list in numerous investigations exceedes 40 kg/m2 [10, 5].

As per Preoperative papilledema in the current investigation, half of patient in the current examination in the two gatherings progressed Grade III papilledema before medical procedure and about the other half progressed Grade IV papilledema before medical procedure and just 3 patient had optic decay

Extreme visual impedance might be a genuine and perpetual complexity of IIH, IIH produces huge visual disability in around 25% of patients. The danger of visual misfortune in the pediatric IIH populace is like that of grown-ups. Visual decay in IIH patients is normally slow, yet in instances of fulminant papilledema, visual deficiency may show up rather quickly [11].

Reclamation of visual sharpness and goal of papilledema establish the essential objectives of the board in IIH and the benchmark of relative accomplishment of a treatment strategy [12].

Papilledema as a rule settle following half a month or months, however numerous patients are left with some lingering circle height, particularly nasally [12].

As per usable information in the current examination in the two gatherings. The interim of medical procedure was fundamentally lower in Laparoscopic bunch than open gathering as The interim of medical procedure in Laparoscopic bunch was 1.33 ± 0.52 hour and was 2.58 ± 0.63 hour in open gathering

($p < .00001$). Blood loos during medical procedure was essentially lower in Laparoscopic bunch than open gathering ($p = 0.004$)

In Raysi et al., [8] study, The all out careful time was under 30 min with proximal (catheter position and burrowing of the shunt down to the mid-region) and distal techniques (trocars inclusion, stomach examination, distal catheter addition, control of shunt capacity, and conclusion of stomach entry points) performed all the while. In the laparotomic gathering, the absolute careful time went from 45 to 80 min all things being equal. The contrast between the two gatherings was measurably huge ($p<0.05$).

Himal [13] detailed that laparoscopic strategies have numerous focal points including the shirking of huge open injuries or cuts (consequently diminishing blood misfortune, agony, and inconvenience); more limited employable occasions; diminished danger of incisional hernia; simplicity of careful method; and especially in shunt medical procedures, direct perception of CSF stream out of the distal catheter into the stomach hole.

As indicated by post-usable information in the two gatherings in the current examination. The mean Post-employable remain was altogether lower in Laparoscopic bunch than open gathering as The interim of medical procedure in Laparoscopic bunch was 1.35 ± 0.47 day and was 3.35 ± 1.52 day in open gathering ($p < .00001$). Likewise pace of Complications was altogether lower in Laparoscopic bunch than open gathering ($p= 0.009$) . Pace of Satisfaction was higher in Laparoscopic bunch than open gathering however with no factually critical ($p = 0.301$)

As indicated by Hammers et al., [14] Preferences of laparoscopic systems incorporate diminished post-usable torment and opiate prerequisites, more limited clinic remain, and lower bleakness from wound disease or incisional hernia. The danger of a malpositioned catheter in the preperitoneal fat cushion is wiped out as the intraperitoneal substance are unmistakably distinguished.

As indicated by Need for rehashed medical procedures in the current investigation, 8 patient in open gathering required re-try for once and 3 patients required rehashed medical procedures for multiple times and one patient for multiple times. While in Laparoscopic gathering, Rate of rehashed medical procedures was lower, 2 patient required re-try for once and one patient required rehashed medical procedures for multiple times . There was a factually critical contrast between the two gatherings as indicated by Need for rehashed medical procedures ($p = 0.031$)

Turner et al. [15] provided details regarding 111 patients who went through laparoscopic addition of the peritoneal catheter of a LP shunt over an around two-year time span. The normal subsequent period was 21.7 months. Normal medical clinic remain was 1-multi day.

In our investigation we covered 20 patients who went through laparoscopic medical procedure of LP shunt over approximatly two-year time span. The normal subsequent period was 21.7months .and normal clinic remain was 1.35 ± 0.47 day .

Lumbar shunts have been customarily embedded into the peritoneum by means of a parallel minilaparotomy entry point. We accept that embeddings the peritoneal finish of the catheter laparoscopically can diminish a portion of the confusions related with lumbarperitoneal shunting. The peritoneal finish of the shunt can be set under vision in a territory liberated from attachments or fat, hypothetically diminishing the frequency of early distal shunt block.

The laparoscopic arrangement of lumbarperitoneal shunts is a protected and useful strategy with numerous advantages.The laparoscopic situation system should be especially viewed as in large and butterball shaped patients with IIH. It abbreviates the length of the passer causing less harm on the skin and subcutaneous tissue and diminishes the exertion applied by the neurosurgeon .Introduction of the laparoscope in LP shunts encourages the patients to evade redundancy of medical procedure as the laparosopist guides the catheter to the percise area away from any adheions or in stomach fat .It dodges slippage of peritoneal end as the specialist puts it under visualization,unlike surgoens who put it indiscriminately in the open technique .It expands the patient fulfillment about the very samll entry points which are cosmotically in a way that is better than the cuts in open medical procedures, which have higher danger of incisional hernia .It builds the specialist's certainty about working in patients with past abdominal surgeris.

5. Conclusion

The laparoscopic placement of lumbarperitoneal shunts is a safe and efficacious procedure with many advantages over the traditional minilaparotomy approach. The laparoscopic placement procedure should be particularly considered in obese patients with IIH.

References

[1] P.Julayanont, A.Karukote, D.Ruthirago, D.Panikkath, Idiopathic intracranial hypertension: ongoing clinical challenges and future prospects. J Pain Res, Vol.9, PP.87-99,2016.

[2] S.Ozturk, H.Cakin, K.Karabulut, R.Pasahan, Laparoscopy in the Management of Lumboperitoneal Shunt Catheter in Obese Patients with Pseudotumor Cerebri. Niger J Clin Pract, Vol.21, PP.397-400,2018.

[3] J.Samir, K.Wolff, R.Antonio, Laparoscopic-Assisted Lumboperitoneal Shunt: A Simplified Technique. JSLS , Vol.5, PP.305-307,2001.

[4] R.Jonathan, S.Boaz, S.Amir , E.Hanoch, Laparoscopic versus non– laparoscopic-assisted ventriculoperitoneal shunt placement in adults. A retrospective analysis. Surgical Neurology, Vol. 68 , PP.177–184,2007.

[5] D.Naidoo, A.Kiss, D.Manoussakis, Laparoscopic Insertion Of Lumbar Peritoneal Shunts For Idiopathic Intracranial Hypertension. Ajns 2017 Vol. 36, No 1,2017.

[6] M.Eduard García-Cruza, J.M.Vera-Riverab, J.M.Corral Moroa, A. Mallafré-Salaa, Laparoscopic placement of peritoneal dialysis catheter: description and results of a two-port technique :Nefrologia , Vol.10, PP.3265,2010.

[7] A.k.Ball, C.e.Clarke,Idiopathic Intracranial Hypertension. The Lancet Neurology, Vol. 5(5), PP.433-442,2006.

[8] S.Raysi Dehcordi, C.De Tommasi, A.Ricci, S.Marzi, Laparoscopy-Assisted Ventriculoperitoneal Shunt Surgery: Personal Experience And Review Of The Literature. Neurosurgical Review, Vol. 34(3), PP. 363–371,2011.

[9] J.Roth, B.Sagie, A.Szold, H.Elran, Laparoscopic Versus Non–Laparoscopic-Assisted Ventriculoperitoneal Shunt Placement In Adults. A Retrospective Analysis. Surgical Neurology, Vol. 68(2), PP. 177–184,2007.

[10] S.Ozturk, H.Cakin, K.Karabulut, R.Pasahan, Laparoscopy in the Management of Lumboperitoneal Shunt Catheter in Obese Patients with Pseudotumor Cerebri. Niger J Clin Pract, Vol.21, PP.397-400,2018.

[11] V.a.Shah, R.h.Kardon, A.g.Lee, J.j.Corbett, Long-Term Follow-Up Of Idiopathic Intracranial Hypertension: The Iowa Experience. Neurology, Vol. 70, PP.634–640.2008.

[12] D.i.Friedman, D.m.Jacobson,Diagnostic Criteria For Idiopathic Intracranial Hypertension. Neurology, Vol.59, PP.1492-5, 2014.

[13] H.s.Himal, Minimally Invasive (Laparoscopic) Surgery. Surg Endosc , PP. 16164752, 2002.

[14] R.Hammers, V. C.Prabhu, S.Sarker, W. M. Jay, Laparoscopic-Assisted Lumboperitoneal Shunt Placement For Idiopathic Intracranial Hypertension. Seminars In Ophthalmology, Vol.23(3), PP. 151–155,2008.

[15] R.D.Turner, S.M.Rosenblatt, B.Chand, M.G.Luciano, Laparoscopic peritoneal catheter placement: results of a new method in 111 patients. Neurosurgery: Operative Neurosurgery (September), Vol.61:ONS, PP.167–174,2007.