Laparoscopy versus Laparotomy for primary surgical management of endometrial cancer

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Abstract:

Purpose: The aim of this study is to review qualified literature to compare the laparoscopic (MAS) with the abdominal (TAS) approach for treatment of patients with endometrial carcinoma

Methods : We search for all clinical trial, comparative prospective and retrospective studies, and cohort studies throw Cochrane Central Register of controlled trial, Medline, EMBASE, NCI.

Results: Were found five Randomized Clinical trial LAVH or TLH versus Abdominal Hysterectomy and nine comparative reliable studies.
We proceeded to analyze these study to compare MAS versus TAS first surgery to manage endometrial cancer Overall Survival (OS), Disease free survival (DFS), recurrence, surgery and post surgery complication,
Concordance of results between RCT and Comparative studies give value at: OS and DFS independent variables from the access technique but size sample is not sufficient in both, comparative and RCT, to definitively accreditatethis purpose.
Intraoperative complications and Postoperative more frequent significantly in TAS.

Conclusion
LAVH and TAH seem to be save in endometrial cancer I to III FIGO stage patients with less side effect but more evidence needs about OS, DFS and recurrences by site. Vaginal recurrence and urologic complications need more attention. Lack of consensus agreement about surgery techniques for extrafascial total hysterectomy in MAS often not permit comparability of the studies. Doubts persist about vault and pelvic and port side recurrence in MAS technique.

Keywords: *endometrial cancer, endometrial neoplasm, Laparoscopic assisted vaginal hysterectomy, Trans Abdominal Hysterectomy, Total Laparoscopic Hysterectomy.*

Backgraund

Traditionally staging endometrial cancer (1) is performed through a laparotomy (TAS) but growing instruments and skills for Minimal Access Surgery (MAS) increased over in the World performing, in the clinical practice, surgery and staging endometrial cancer

laparoscopically.
Some studies suggest that the laparoscopic approach results in a reduction
in postoperative morbidity also in overweight and elderly women
(2) (3), in comparable intraoperative complications and perhaps similar Overall Survival and Desease free Survival (4), (5), (6).
The effectiveness of the new surgical technical approach for staging endometrial cancer Laparoscopy assisted vaginal hysterectomy (LAVH) and Total Laparoscopic Hysterectomy (TLH) with attention to the main outcome it is not yet established.
The risk of port site metastases and the risk of vaginal recurrence are not established.
All studies found less hospital stay, operative time longer in MAS, similar possibility to execute a correct staging for I and II stage with more linphonodes in MAS.
The aim of this study is to review qualified literature to compare overall survival (OS), Disease free survival (DFS), surgery and post surgery complication, in open versus MA surgery to manage endometrial cancer.
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Material and Methods:

We search for clinical trial and comparative studies for all stages endometrial cancer in woman managed with surgery as first step therapy throw Cochrane Central Register of controlled trial, Medline, EMBASE, NCI.

Type of surgery: LAVH and TLH and TAH

End point for searching: DFS, OS, Recurrences, Complication intraoperative (Blood loss, urinary tract injury, bowel injury, vessel injury) and postoperative (Infection, DVT, hematoma).

We searched with :

1) Endometrial cancer
2) Endometrial neoplasm
3) Endometrial carcinoma
4) Laparoscopic Assisted Vaginal Hysterectomy
5) Total Laparoscopic Hysterectomy
6) LAVH
7) TLH
8) Controlled clinical trial
9) Randomized controlled trial
10) Clinical trial

And mesh the terms

We looked at type of study design, size of study and duration of follow up.
And chose to extend the search also to comparative clinical study because the size of RCT was really too small and too short in follow up to evaluate OS, DFS, Recurrence.

This is not a systematic review and no statistic analyses have been performed. A systematic review will be performed by Cochrane Collaborative Oncology Group (18). Data abstraction was directly by full test of the publications in the Journals.

Results

We found five RCT that are shown in the figure 1.
All compare LAVH or TLH with TAH. We consider together LAVH and TLH (MAS) because the majority of the studies compare LAVH with TAH and very few TLH (20) (21) (13).
We found 3 publications from Tozzi and Malur (6) (8) (9) and there is some doubt about the independence of the cases reported. . It would be possible that one RCT was reported on going.
The total number of randomized patients is 429 but only 261 if the three publications by Tozzi and Malur are not independent.
We would have had ask them about.

RCT MAS versus TAS Size of studies

	Pt Total number	Pt MAS	Pt TAS	Conversion	Median Follow up months
Tozzi R 2005	122	63	59		44
Malur S 2001	70	37	33	NO	24
Malur S 2002	98	52	46		50
Fram KM 2002	61	29	32	2	NS
Zullo 2005	78	40	38	5	6
Walker J Gyn Onc 37 meeting Palm Springs 2006	2616	1696	920	23%	6

Figure 1

The median follow up in Tozzi and Malur is sufficient to exclude 80% recidive but this is not true for Fram and Tozzi because the time of follow up is less of 1 year.
All trials admitted woman with diagnosis of endometrial carcinoma without selection of histological type.
The trial from GOG J Walker with a sample size adequate had been closed in 2006 but we are attending for results. From preliminary report we can see that the rate of convertions is higher (23%) than that of RCT (12)

Tozzi (6) and Malur (8) (9) admitted stage I to III, Fram (10) and Zullo (11) admitted woman with estimated I stage endometrial cancer.
Tozzi and Malur perfomed LAVH also with coagulation of uterine artery during laparoscopy time at the origin from internal iliac artery without transaction.
Fram catch the artery during vaginal time. Zullo refer to LAVH previous description. Not all studies reported if and which kind of uterine manipulator was used in LAVH performed.
Malur (8) performed "abdominal hysterectomy extrafascially".
The convertion rate to open surgery is not always given.
In figure 2 is shown the sizes of the comparative studies. Total number of patients was 1532 and all authors declare the comparability of the groups but Wang (19) and Obermair (20) for bias of distribution of stage in the two groups.
The conversion rate results range between 2% and 46 % and the median follow up period is longer (than RCT until now) between 23 and 53 months.

Fram and Zullo don't give information about the surgical way for cutting uterine artery.

Comparative Studies. Size of studies.

	Stage	N. Pat	MAS	TAS	Con version	Median follow up
Kuoppala T Ret 2004	All	80	40	40	1	38,3
Zapico A Ret 2005	I e II	75	38	37	2	MAS 36,3 TAS 53,2
Scribner D R Ret 2002	All	100	55	45	46,4 %	
Kalogianidis I Prosp 2007	I	169	69	100	5.5%	51
Kim D Y Ret 2005	I II	242	74	168	?	M 30,5 T 36,5
Holub Z Prosp 2002	All	221	177	44	?	M 33,6 T 45,2
Wang CK Retrosp 2005	All	57	19	38	1	? Bias for Stage I distribution
Obermair A Retr 2003	All	510	226	224	11(4%)	23,8 Bias for stage differences
Obermair A Retr 2005	**Obese All**	**78**	**47**	**31**	**5 (10,6)**	**23,8**

Figure2

Recurrences, OS and DFS from RCT and comparative are in figure 3 and 4

RCT MAS versus TAS
OS DFS Recurrences Deaths

	Tozzi 2005 MAS%	TAS	Malur 2001 MAS	TAS	Malur 2002	Fram 2002 MAS TAS	Zullo 2005 MAS TAS
Recurrence			1	2			1
DFS	87,4	91,6	97,3	93,3	Not Different		
OS	82,7	86,5	83,9	90,9	Not different		
I FIGO stage	91,2	93,8					
>I C FIGO stage	86,5	89,7					
Deaths correlated			1	2			
Deaths no correlated			5	2			

Figure 3

RCT found no significant differences in OS, DFS.
This conclusion is the same in the nine studies comparative with a longer time of median follow up. (Fig 4)
Recurrences is not so different in the groups if we exclude Obemair and Kalogianidis that declare bias for Stage I different distribution and found more recurrences in the MAS group.

Comparative Studies.
OS DFS Recurrences Deaths

	Recurrence MAS TAS	OS MAS TAS	DFS MAS TAS	Deaths Corr not
Kuoppala T Ret 2004	1		96,3 total	1(2,5) 1 (2,5)
Zapico A Ret 2005	2 2		81,6 81,1	4 (10.5) 3(8,1)
Scribner D R Ret 2002	NOT			2
Kalogianidis I Prosp 2007	6 (8,7) 16(16)	93% 86%	91% 84%	Bias for Stage I distribution
Kim D Y Ret 2005	1(0,6) 2(1,2)		97,5 98,6	
Holub Z Prosp 2002	NS			
Wang CK Retrosp 2005	?			
Obermair A Retr 2003	9(4,0) 37(14,9)		96,0 83,4	
Obermair A	4	87,8 (60 m)		3

Figure 4

Obermaier (21) found a better DFS in TAS than in MAS for the bias.
The size of RTC studies permits quite good evaluation of some complications like blood loss intraoperative and overall complication postoperative but not rare complications like injury and DVT or deaths surgery correlate (Fig 5).

Complication MAS versus TAS

	Tozzi 2005 MAS% TAS	Malur 2001 MAS TAS	Fram 2002 MAS TAS	Zullo 2005 MAS TAS	Walker J 2006
Intra operative	4,7 15,2			7,5 10,5	
Blood loss	n 1 n 8	n 0 n 2	n 1 n 2	N 0 n 1	
Bowel I	n 1				
Urin tract I	n 1	n 0 n 2	n 2	N 2 n 2	
Post early Operative late	23,8 47.4 7,9 35,5	29,7 39,3		27,5 47,4	TAS more
Infection	n 13 n 22		n 1 n 4	n 9 n 8	
Hematoma	n 1 n 2	n 1	n 1	n 0 n 1	
DVT	N 0 n 4			n 0 n 1	
QoL	Better MAS Kornblith	then TAS 37 meeting	before six Gyn Onc 2006	months Palm Spring	

Figure 5

From the comparative studies there is confirm that postoperative complication are reduced by MAS. (Fig 6)
Reduction is significant for the infection complications.
The rate of intraoperative complications is less in MAS in the RCT studies but not in comparative studies where not significant differences were found.
The blood loss is significantly less in MAS than in TAS but postoperative transfusions was no so different.

Comparative Studies. Complications

	Intra Operative	Blood loss	Urin Tract I	Bowel Ing	Vessel Ing	Post operative	Infection	Hematoma	DVT
Kuoppala T MAS Ret 2004 TAS		S				15(37,5) 22(55,0)	7(17,5) 19(47,5)		1
Zapico A MAS Ret 2005 TAS	5(13,2) 7(18,9)	2 N 3 S	 2	 2		7(18,4) 14(38,8)	7(18,4) 8(19.0)		
Scribner D R MAS Ret 2002 TAS	NS					7,3% 31,1%	9% 22%		2 2
Kalogianidis I MAS Prosp 2007 TAS			1	1	1				
Kim D Y MAS Ret 2005 TAS	NS								
Holub Z MAS Prosp 2002 TAS	NS					2(10,5) 8(22,2)			
Wang CK Retrosp 2005	NO								
Obermair A Retr 2003	NS	5			1		1(2,1) 15(48,4)	4(8,5) 0	
Obermair A Retr 2005		NS but	1	2			4(6%) 7(15,6)		

Figure 6

Conclusion
It seems safe to perform MAS for staging endometrial cancer.
We must expect more conversions than we thought, also in I and II stage cancer.
We have only few observations about recurrences. It seems that MAS approach doesn't' change the rate of port side recurrences and abdominal recurrences. We need more confirms that cells are not spread in the abdominal cavity by CO_2 insufflation.
More follow up time and the Walker GOG trial results we hope will give us more certainties.,
Postoperative complications are less in MAS and for the intraoperative complications we can hope that increasing skills will give more advantage to the MAS technique.
More consensus about extrafascial hysterectomy needs. This can influence

recurrences.
The laparoscopic way to perform LAVH is described (Childers M 1993, 1992 and McCartney 1995) but division of the uterine vessels sometime is performed during the laparoscopy time, sometime during vaginal approach
The actual tendency to prefer to perform LTH open new problems about uterine manipulator save for the integrity of endometrial line after surgery.
Tube manipulator has been proposed by Obemair.
RCT proposed by Janda (24) 2006 that compare TLH with TAH is the replay to respond questions MAS versus TAS in a really similar way to perform staging endometrial cancer quality surgery.

Bibiography

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