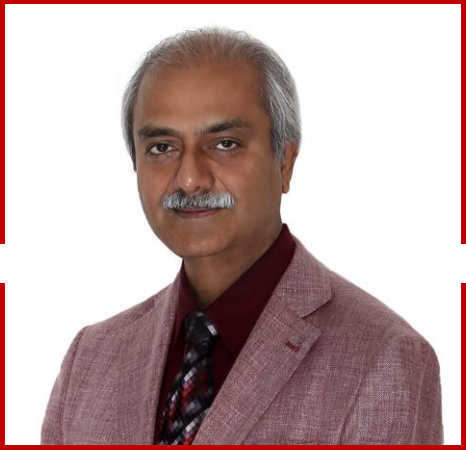
10-year Results of Ileal Interposition for Diabetes in BMI 20—35kg/m2



Dr. Surendra Ugale

Ayushka & Akshan Ugale, Praveen Reddy, Trilok

UGALE BARIATRICS

Kirloskar Hospital, Hyderabad

[X]-- I have no potential conflict of interest to report

Jejunal Ileal Interposition + Sleeve

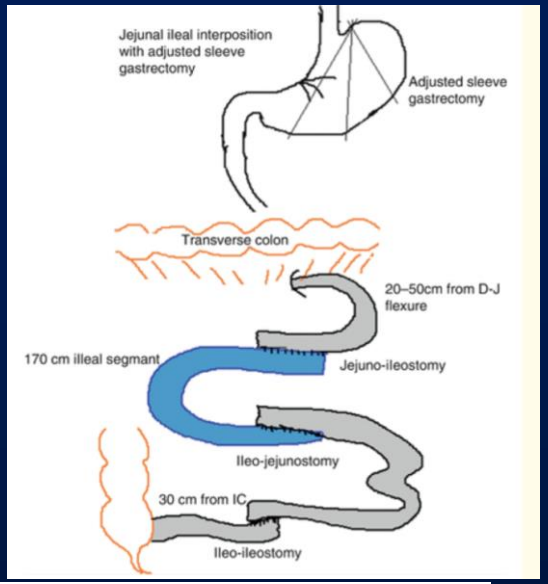
*Good weight maintenance even at 10 years

--% Total weight loss → 21.3% at 5 years, mean BMI - 25.6

--whereas % TWL at 10 years - 16.5% ; mean BMI – 27

*Good Nutritional Stability with Glycemic & Lipid control

*Follow-up : 63.8% at 10 yrs



ECRONICON OPEN ACCESS

EC ENDOCRINOLOGY AND METABOLIC RESEARCH

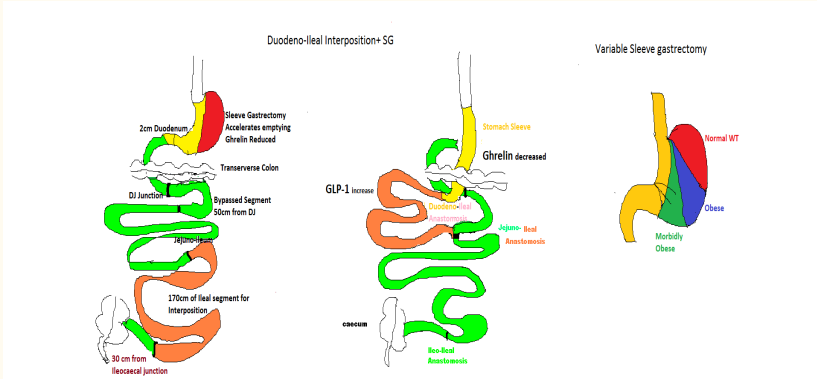
Research Article

10 Year Data on Efficacy of Diabetes and Weight Control by Ileal Interposition with Sleeve - Sleeve Plus Procedure Without any Bowel Exclusion

Surendra Ugale[1]*, Akshan Ugale[2], Ayushka Ugale[3] and Trilok Ram[4]

10-year Results of Ileal Interposition for Diabetes in BMI 20—35kg/m2

Diabetes Remission – 10yr Data



	1y	5y	10y
Remission (HbA1c <6.5, No meds)%	71	63.77	66.67
Glycemic control % (HbA1c <7)	82.61	73.9	71.43

Henry

Journal of Diabetes & Metabolic Syndrome

Research Article

Diabetes and Obesity Control Following Duodenal Ileal Interposition with BMI-Adjusted Sleeve Gastrectomy-10years Data from a Single Surgeon Experience

Surendra Ugale[1*], Akshan Ugale[2], Ayushka Ugale[3] and Trilok Ram[4]

FINALLY ➔ Global Validation for Lower BMI Surgery

BUT we needed much lower, for Uncontrolled Diabetes

ELSEVIER

Check for updates

SURGERY FOR OBESITY AND RELATED DISEASES

Surgery for Obesity and Related Diseases 18 (2022) 1345–1356

Original article

2022 American Society for Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO): Indications for Metabolic and Bariatric Surgery

Dan Eisenberg, M.D.[a,*], Scott A. Shikora, M.D.[b], Edo Aarts, M.D., Ph.D.[c], Ali Aminian, M.D.[d], Luigi Angrisani, M.D.[e], Ricardo V. Cohen, M.D., Ph.D.[f], Maurizio De Luca, M.D.[g], Silvia L. Faria, Ph.D.[h], Kasey P. S. Goodpaster, Ph.D.[d], Ashraf Haddad, M.D.[i], Jacques M. Himpens, M.D., Ph.D.[j], Lilian Kow, B.M.B.S., Ph.D.[k], Marina Kurian, M.D.[l], Ken Loi, M.B.B.S., B.Sc. (Med)[m], Kamal Mahawar, M.B.B.S., M.Sc.[n], Abdelrahman Nimeri, M.D., M.B.B.Ch.[o], Mary O'Kane, M.Sc., R.D.[p], Pavlos K. Papasavas, M.D.[q], Jaime Ponce, M.D.[r], Janey S. A. Pratt, M.D.[a,s], Ann M. Rogers, M.D.[t], Kimberley E. Steele, M.D., Ph.D.[u], Michel Suter, M.D.[v,w], Shanu N. Kothari, M.D.[x]

Ileal Interposition with Sleeve

The Pioneer --Dr. Aureo de Paula
Started in 2003

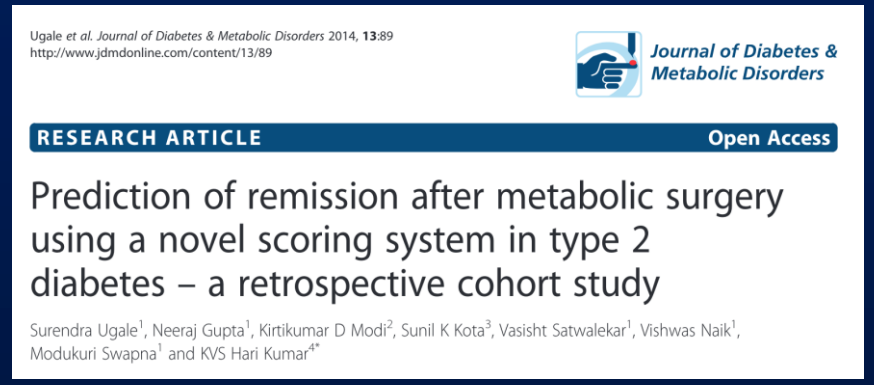
My Teacher -- Goiania, Brazil

We
2008—2010 ➔ Only Jejunal IISG
From 2010 onwards, Duodenal IISG

Diabetes Severity & Remission Score - 2013

	Score	
Parameters	1	2
Age (Years)	30-60	> 60 or < 30
BMI (Kg/ m^2)	>27	⩽27
Duration of Diabetes (Years)	< 10	≥ 10
Microvascular involvement **(Nephro/Retino/Neuropathy)**	Absent	Present
Macrovascular involvement **(Cardio/Cerebro/Peripheral Vascular)**	Absent	Present
Mandatory insulin usage	No	Yes
Stimulated C- peptide (ng/ml)	≥ 4	< 4
HbA1c	<8	8 or >

Multiple Scoring Systems → Severity of DM & Predictive Factors for Remission



Ugale *et al. Journal of Diabetes & Metabolic Disorders* 2014, **13**:89
http://www.jdmdonline.com/content/13/89

Journal of Diabetes & Metabolic Disorders

RESEARCH ARTICLE Open Access

Prediction of remission after metabolic surgery using a novel scoring system in type 2 diabetes – a retrospective cohort study

Surendra Ugale[1], Neeraj Gupta[1], Kirtikumar D Modi[2], Sunil K Kota[3], Vasisht Satwalekar[1], Vishwas Naik[1], Modukuri Swapna[1] and KVS Hari Kumar[4*]

***Diabetes Remission Score– Ugale et al- 2013**

*DiaRem Score– Christopher Still et al- North America-2014

*ABCD score – W.J. Lee et al - Asia 2015

***Individualised Metabolic Score - Aminian, Schauer et al 2017**

***DiaBetter Score - 2017 - Pucci, Batterham, London**

…….all are published

Patient selection

Inclusion Criteria

- Patients with Type 2 diabetes mellitus of ≥ 1 year duration
- Age between 20 and 70 years
- BMI ≥20 kg/m^2
- Post meal C-peptide > 1.5 ng/ml

Exclusion criteria

- Type 1 diabetes / LADA
- Diabetes with undetectable fasting C-peptide
- Positive urine ketones
- Pregnancy
- CKD (GFR < 30ml/min)
- Coexisting severe hepatic, pulmonary, cardiovascular disorder.

Patient Selection – Subgroup of Diabetics

*Diabetes + Morbid Obesity

*Diabetes + Dyslipidemia/CAD/HTN

*Diabetes + Nephropathy/Retinopathy

*Diabetes + Hypoglycemia/Glucose fluctuations

*Diabetes + Uncontrolled A1c
(inspite of high doses of drugs/insulin)

Why address Low BMI Patients?

80% Type II Diabetes BMI <35

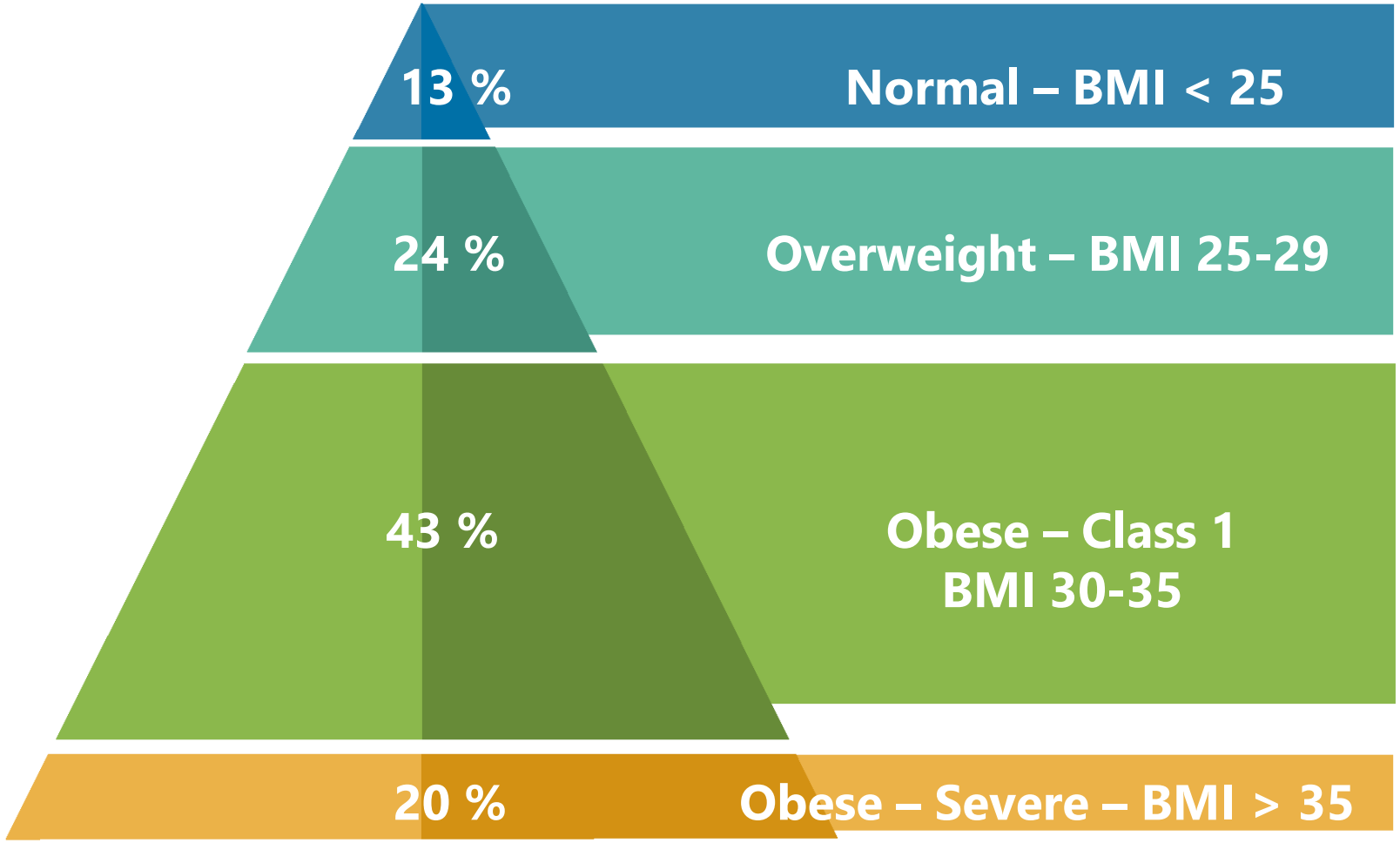
NHANES 1999 - 2004

NEJM 2013

*Our Data →

BMI <30 = 54%

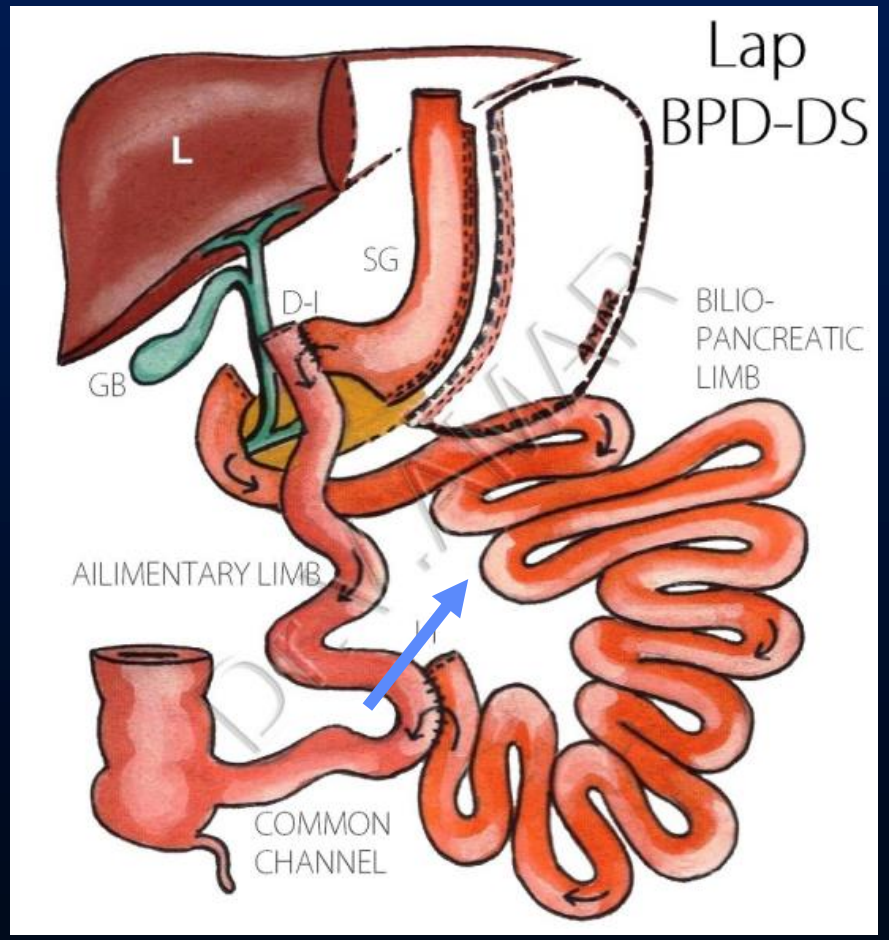
BMI <35 = 76%

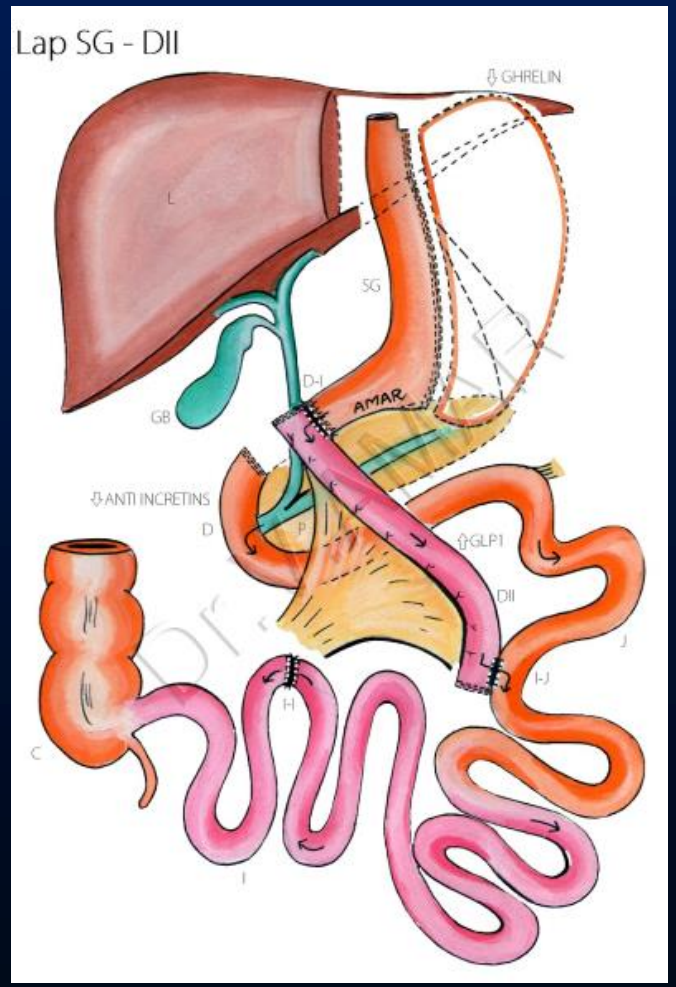


Surgical Treatment of Type 2 Diabetes, for all BMI Groups

Learning from Success of Duodenal Switch➔

SECRET → Using the Ileum !! without the extensive bypass

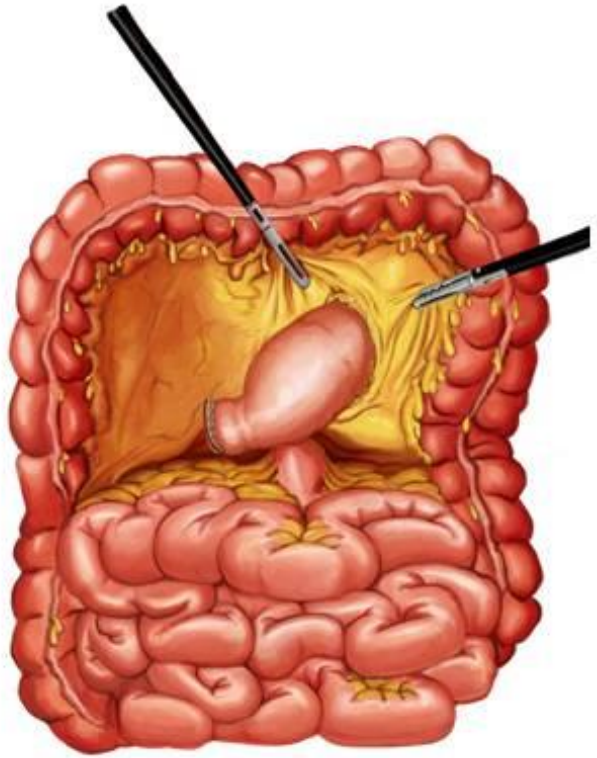




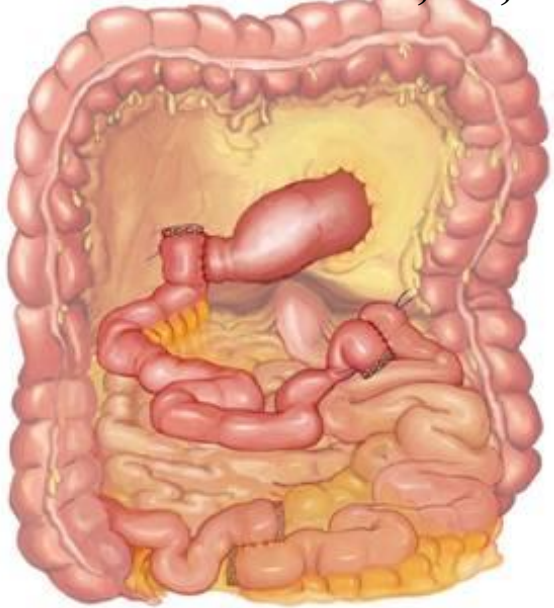
BMI-Adjusted Tailored SLEEVE

Duodenal Transection

STEPS ➔



3 anastomosis = D-I, I-J, I-I



Gastro-duodenal Sleeve taken Infra-colic

End-side, Side-side & Side-side

Demographics

Total patients	310
Male	204
Female	106
Age Mean	46 (Range 22 - 72)
DM duration Mean	10.4 (Range 0.5 - 40 years)
Fasting C-Peptide mean	2.86 (Range 0.32 - 10)
Stimulated C-Peptide mean	4.89 (Range 0.82 - 17.1)
Fasting Insulin mean	30.9 (Range 0.5 - 359.7)
Dyslipidemia	59.36%
Fatty Liver	54.98%
HTN	50.20%

Follow Up for Duodenal Ileal Interposition

HbA1c Mean

BMI group	Pre-Op	1 yr	3 yr	5 yr	7 yr	10 yr	12 yr
20.00-24.99	9.15	6.61	7.07	6.44	6.56	6.77	6.83
25.00-29.99	9.35	6.14	6.26	6.55	6.79	6.97	7.42
30.00-34.99	9.26	6.03	6.21	6.44	6.62	6.74	6.8
35.00-39.99	8.86	5.9	5.96	6.12	6.17	6.28	6.03
>40.00	8.8	6.1	6.02	6.15	6.23	6.88	6.3

BMI Mean

BMI group	1 yr	3 yr	5 yr	7 yr	10 yr	12 yr
20.00-24.99	20.2	20.7	21.2	21.5	21.5	22
25.00-29.99	21.75	22.8	23.46	23.8	23	23
30.00-34.99	23.47	24.6	25	24.8	25.2	26
35.00-39.99	24.9	26.25	26.63	25.58	26.1	28
>40.00	30.1	30.09	30.4	31.69	34.6	33

	FBS (Mean)	PPBS (Mean)	Se. Triglycerides	Se. Cholesterol
Preop	181.85	246.68	176.29	157.17
1-yr	104.00	121.87	96.72	136.08
3-yr	111.66	121.91	101.12	117.90
5-yr	106.87	129.88	102.12	90.68
7-yr	121.68	146.02	98.34	96.89
10-yr	101.97	123.21	103.99	149.13
12-yr	95.81	118.81	94.50	103.72

Nutritional Status

	Pre Op	1y	3y	5y	7y	10y	12y
HB	13	12.25	11.41	11.71	12.82	11.82	**12.87**
T.Protein	7.14	6.81	6.79	6.74	6.81	6.88	**6.92**
S. Albumin	4.15	3.79	3.89	3.88	4.25	3.89	**3.89**
Calcium	9.21	8.59	8.35	8.4	8.66	8.29	**8.35**
Vitamin D3	24.01	24.67	22.37	22.88	22.8	21.51	**24.31**
B12	431.73	447.59	454.64	445.96	466.54	422.33	**363.15**
Iron	73.08	51.01	53.8	52.4	53.22	48.14	**55.34**

Diabetes Remission - Duodenal Ileal Interposition

Year	1y	3y	5y	7y	10y	12y
Total Patients	203	163	114	78	38	16
Remission (HbA1c <6.5, no meds)	148	117	79	52	27	12
Remission %	72.91	71.78	69.30	66.67	71.05	75.00

Diabetes Remission - Jejunal Ileal Interposition

Year	1y	3y	5y	7y	10y	12y
Total Patients	76	57	54	44	33	25
Remission (HbA1c <6.5, no meds)	45	36	32	25	15	11
Remission %	59.21	63.16	59.26	56.82	45.45	44.00

Problems & Complications

- Food intolerance - 14 %→Lasts 1 week / 3 months …usually

*Diarrhoea and abdominal pain – 4.5 %

*Intraoperative complications → 2.7% (Ischemic segments, stapler misfire, bleed duodenal stump/short gastric)

**Post-op & Late → 2.2% (Re-explore ileal perf, duodenal stump leak, intra-abd abscess, L sub-phrenic abscess, D-I anastomotic ulcer, Hernia, Esophageal candidiasis)

**Total Complication Rate: 7.5 %

-No mortality from the procedure

Slim / Low BMI Diabetics ➔

ELSEVIER

CrossMark

SURGERY FOR OBESITY AND RELATED DISEASES

Surgery for Obesity and Related Diseases 11 (2015) 372–378

Original article

Duodenal diverted sleeve gastrectomy with ileal interposition does not cause biliary salt malabsorption

Diego A. Foschi, Ph.D.[a,*], Andrea Rizzi, M.D.[a], Igor Tubazio, M.D.[a], Lorenzo Conti, M.D.[a], Tarcisio Vago, M.D.[b], Maurizio Bevilacqua, M.D.[b], Alessandro Magni, M.D.[c], Marina Del Puppo, Ph.D.[c]

[a]*II Unit of General Surgery, Department of Biomedical Sciences, Luigi Sacco Hospital, University of Milan, Milan, Italy*
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Received February 27, 2014; accepted October 26, 2014

*Cannot Tolerate Malabsorption

➔Cannot Tolerate Bypass Surgery

Best Way ➔ Ileal Interposition + BMI-Adjusted Sleeve + Selective Sympathectomy (for Glucagon Control)

What are you looking for ???

- Reduction of Visceral {Metabolic} Fat ? YES → Mean BMI of 27 at 10y
- Good Glycemic control / Remission of DM ? YES → >71 % - 10y
- Good Nutritional Stability ? YES – at 10y
- Reversal of Early Nephropathy, Retinopathy, Dyslipidemia ? YES
- Reduction of CV Mortality ? YES →After 5 yrs of Avoiding Glycemic Fluctuations
- Avoiding Malabsorption & gives Good Quality of Life ? YES -

Advantages of Duodenal-II

*Good hope for SLIM Diabetics

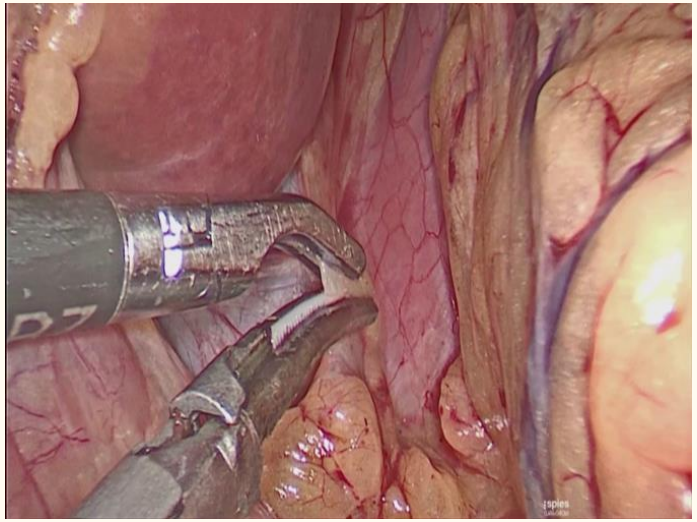
*Nutritional stability without malabsorption

*Rescue Operation for BPD-DS with severe malabsorption

*Financial Benefit : 90% reduction in expenses of diabetes care

[Celik AC, Muharrem Asci, Bahri Onur Celik, Ugale.S; The impact of laparoscopic diverted sleeve gastrectomy with ileal transposition (DSIT) on short term diabetic medication costs; SpringerPlus (2015) 4:417; DOI 10.1186/s40064-015-1216-z.]

Conclusions



***Slim / Low-BMI Diabetics Cannot Tolerate Malabsorption / Bypass

@Being a Glucagonocentric disease

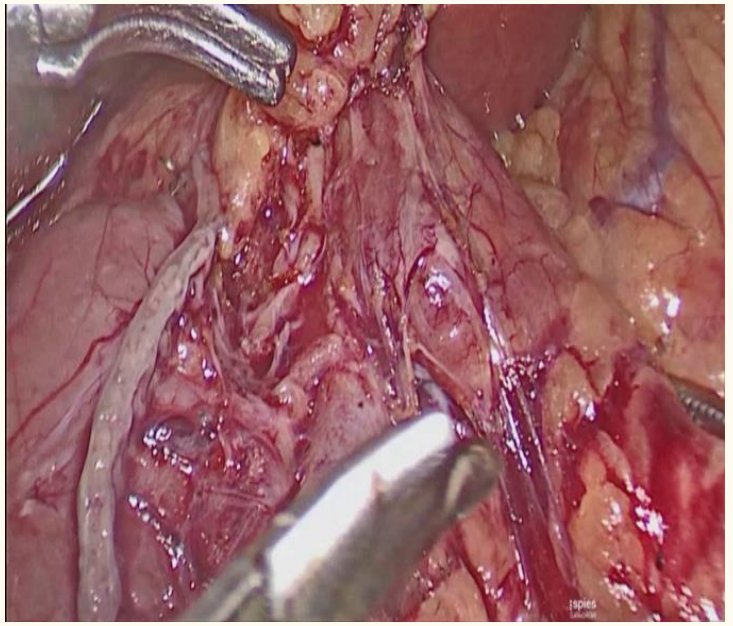
→respond well when Selective Sympathectomy is added

*Ileal Interposition

→ Complex procedure - 3 anastomosis + 4 mesenteric gap closures + Duodenal dissection

→Longer duration of surgery

→Long learning curve



BUT……it's a great Procedure for Diabetics

Also called → Ferrari of all Procedures

THANK YOU

THANK YOU