



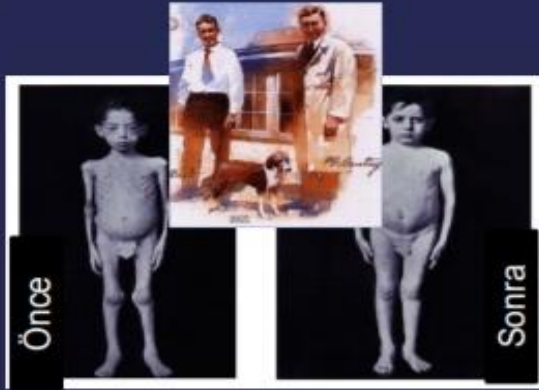
Doç.Dr. Neşe Akcan

Yakın Doğu Üniversitesi Pediatrik Endokrinoloji Bilim Dalı

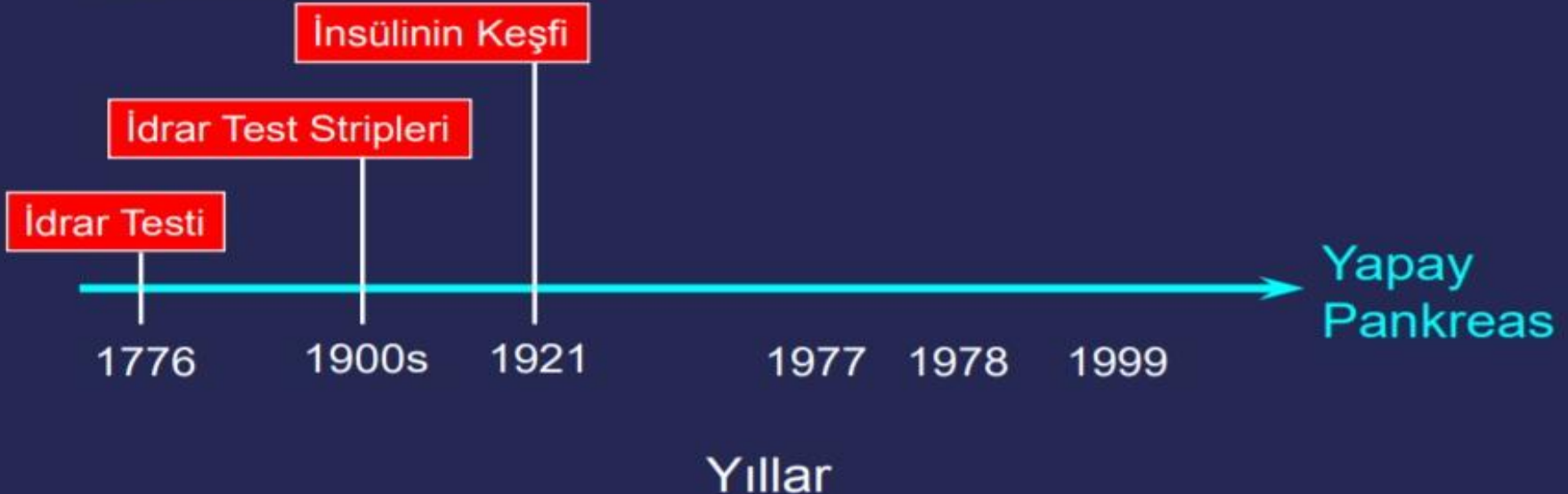
Diyabette İnsulin Pompa Tedavisi

Geçmişten günümüze diyabet

Diyabet yönetimi, insülinin keşfi ile başlar

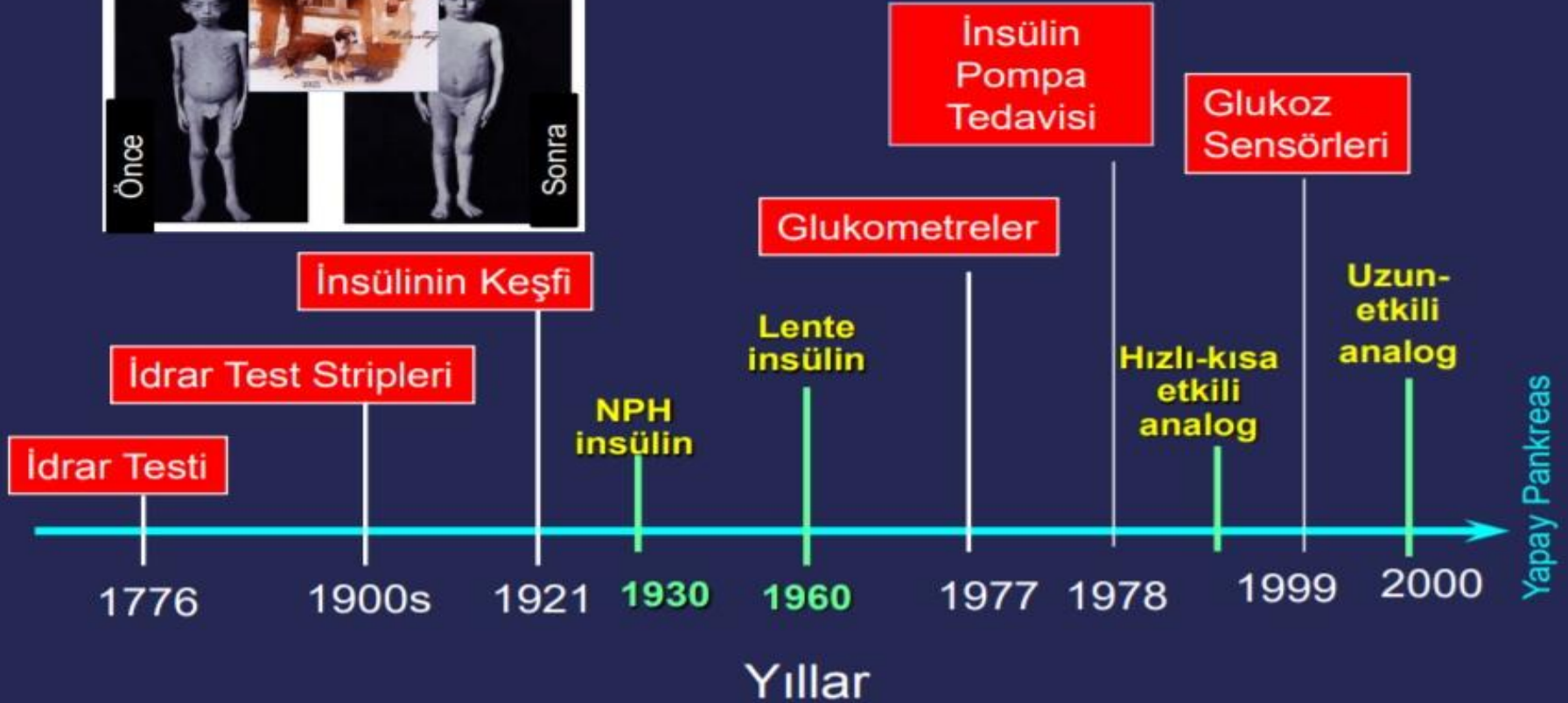


Daha iyi glukoz kontrolü
Daha iyi yaşam kalitesi
Hipoglisemi ve kilo artışının engellenmesi



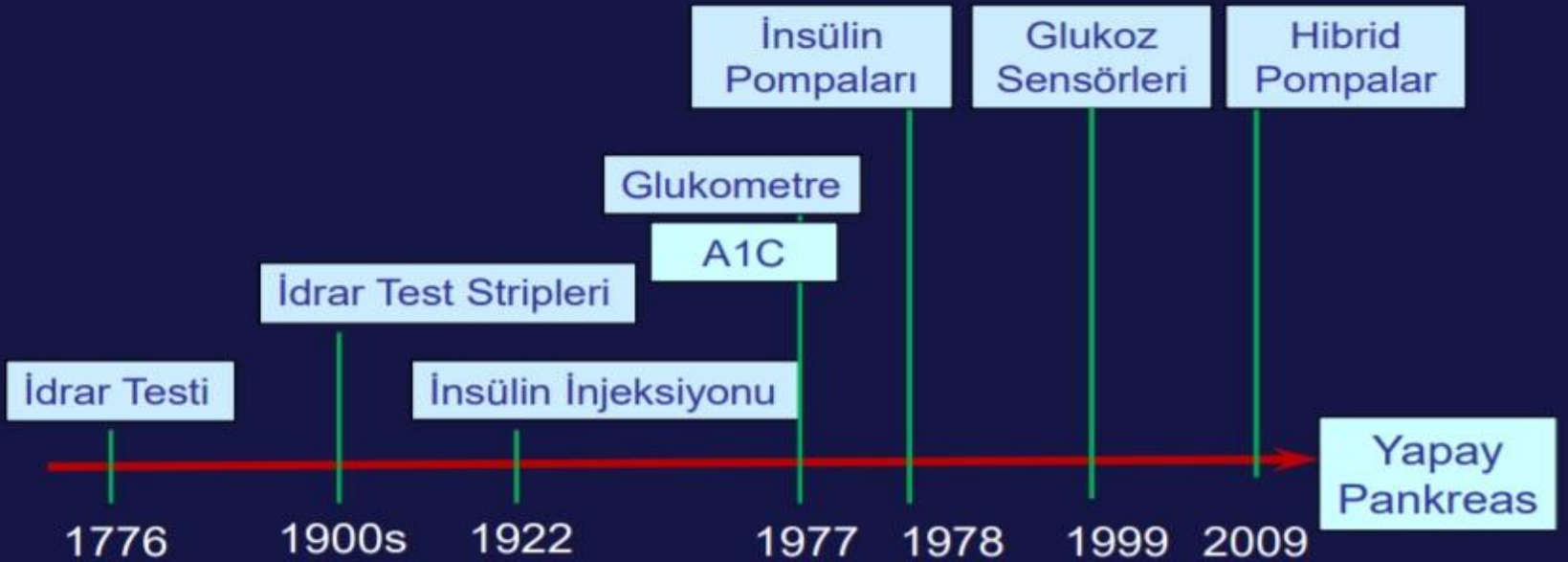
Geçmişten günümüze diyabet

Diyabet yönetiminde teknolojik gelişim



Geçmişten günümüze diyabet

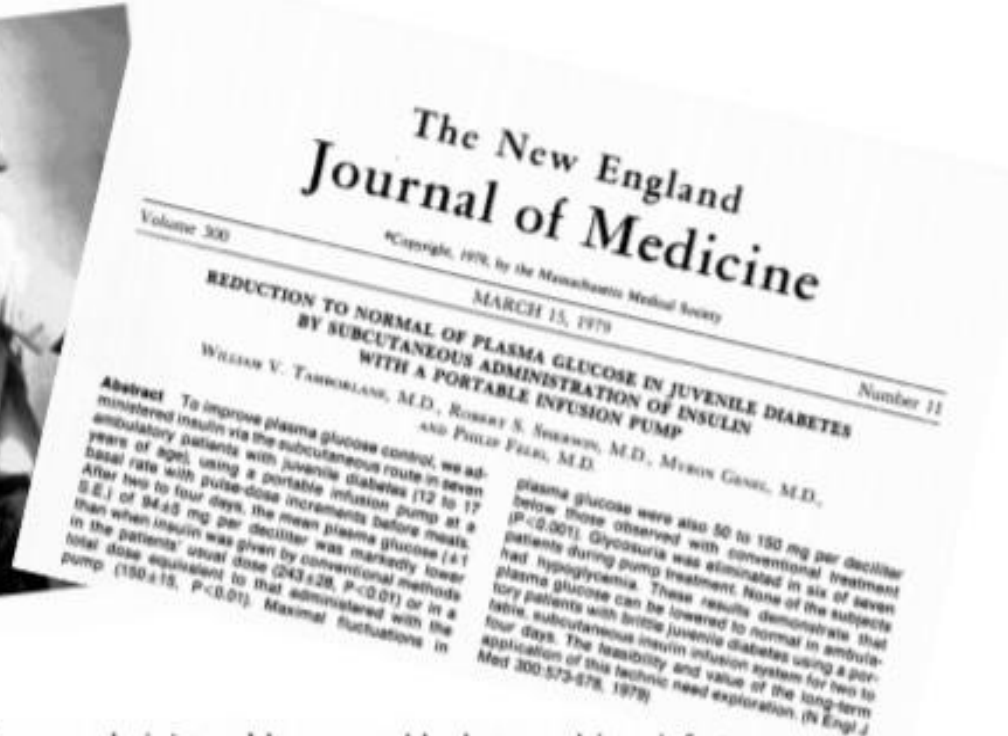
Diyabet tedavisinin teknolojik evrimi



Geçmişten günümüze insulin pompası

1964

Arnold Kadish, MD (private practice, Beverly Hills) is usually credited as the first to create a "wearable" insulin pump, and first to create a portable artificial pancreas by connecting it to a glucose analyzer



Insulin was administered by a portable, battery-driven infusion pump (Model AS2C, Auto-Syringe, Incorporated, Hooksett, New Hampshire). The pump measures 6.4 by 18.3 by 7.3 cm, weighs 408 g and is fitted with a 3-ml disposable plastic syringe. The pump is

Geçmişten günümüze insülin pompası

1964
İlk giyilebilir
insülin pompası

1990-2000'ler

2016, Yapay
Pankreas FDA
onayı aldı

1980'ler



1980s



1990s – 2000s

Sensör
Destekli
Pompalar,
2009-2010

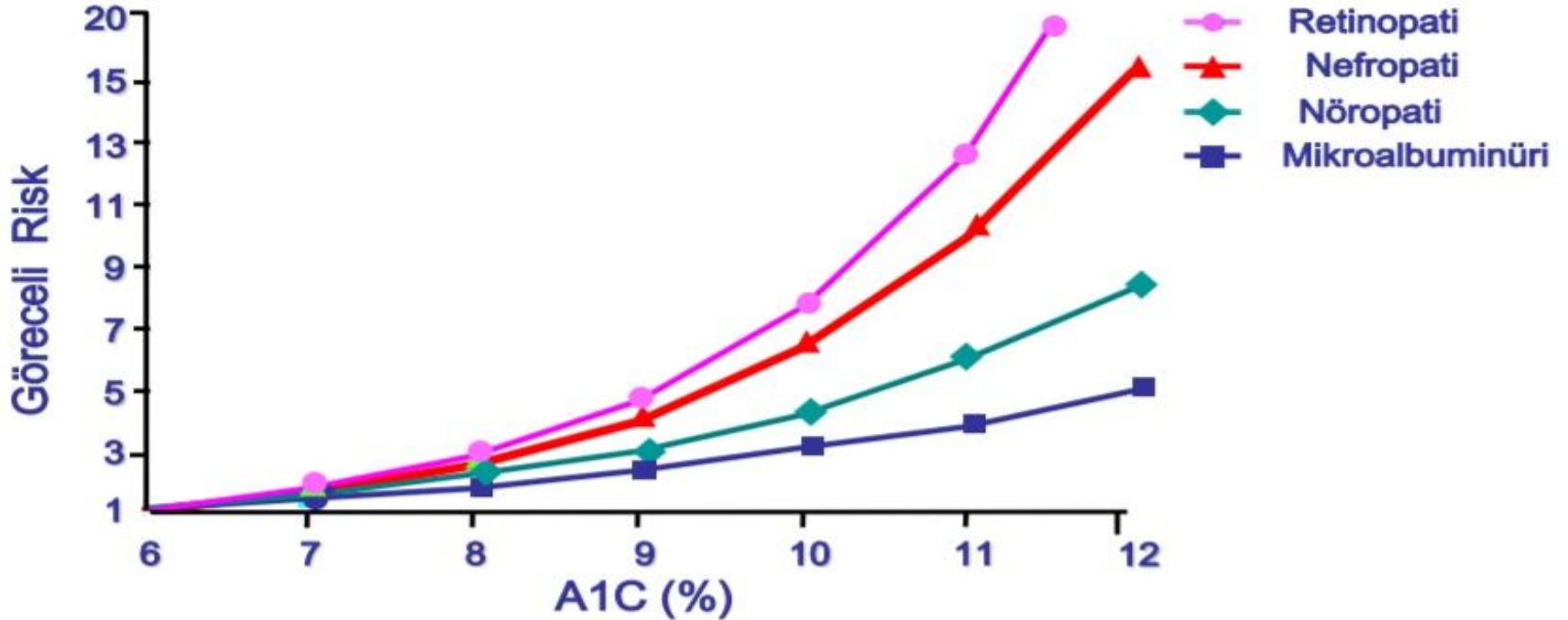


Biyonik
Pankreas
çalışmaları
devam ediyor



Hatırlatma...

A1C ve mikrovasküler komplikasyon riski



DCCT, Diabet Control and Complications Çalışması.

Skyler JS. *Endocrinol Metab Clin North Am.* 1996;25:243-254.

DCCT. *N Engl J Med.* 1993;329:977-986.

DCCT. *Diabet.* 1995;44:968-983.

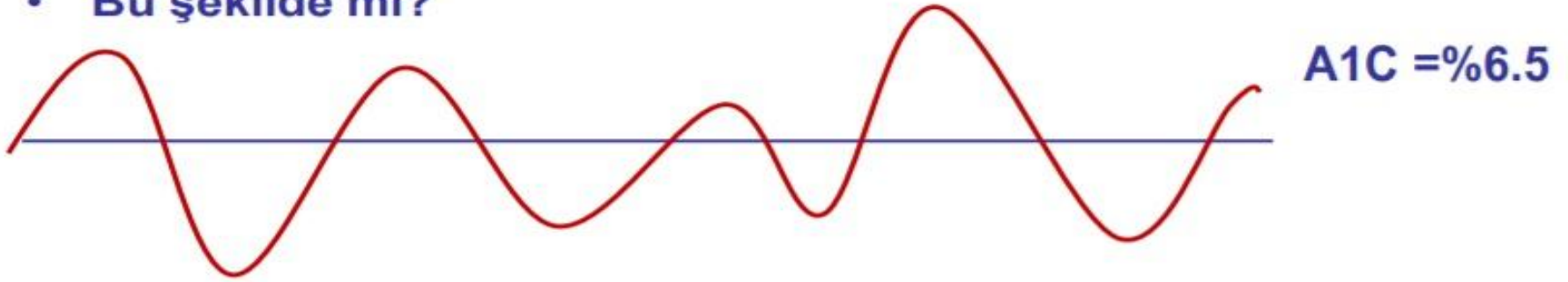
Hatırlatma...

A1C'yi %1 düşürmenin komplikasyon riskine etkisi	
Tip 1 diyabet (DCCT)	Tip 2 diyabet (UKPDS)
Retinopati riski %35	Diyabete bağlı ölüm %25
Nefropati riski %24-44	Tüm nedenlere bağlı mortalite %7
Nöropati riski %30 azalır.	Miyokard infarktüsü riski %18
-	Mikrovasküler kompl. riski %35 azalır.
DCCT Res Group. NEJM 1993;329:977	UKPDS Group. Lancet 1998;352:837

Ancak...!!

A1C ve iyi glisemik kontrol

- 3 aylık glisemi ortalamasını yansıtır mı?
- Bu şekilde mi?



- Şu şekilde mi?



Her ikisi de aynı A1C'yi verir!

Neden pompa?

Çünkü, daha iyi metabolik kontrol

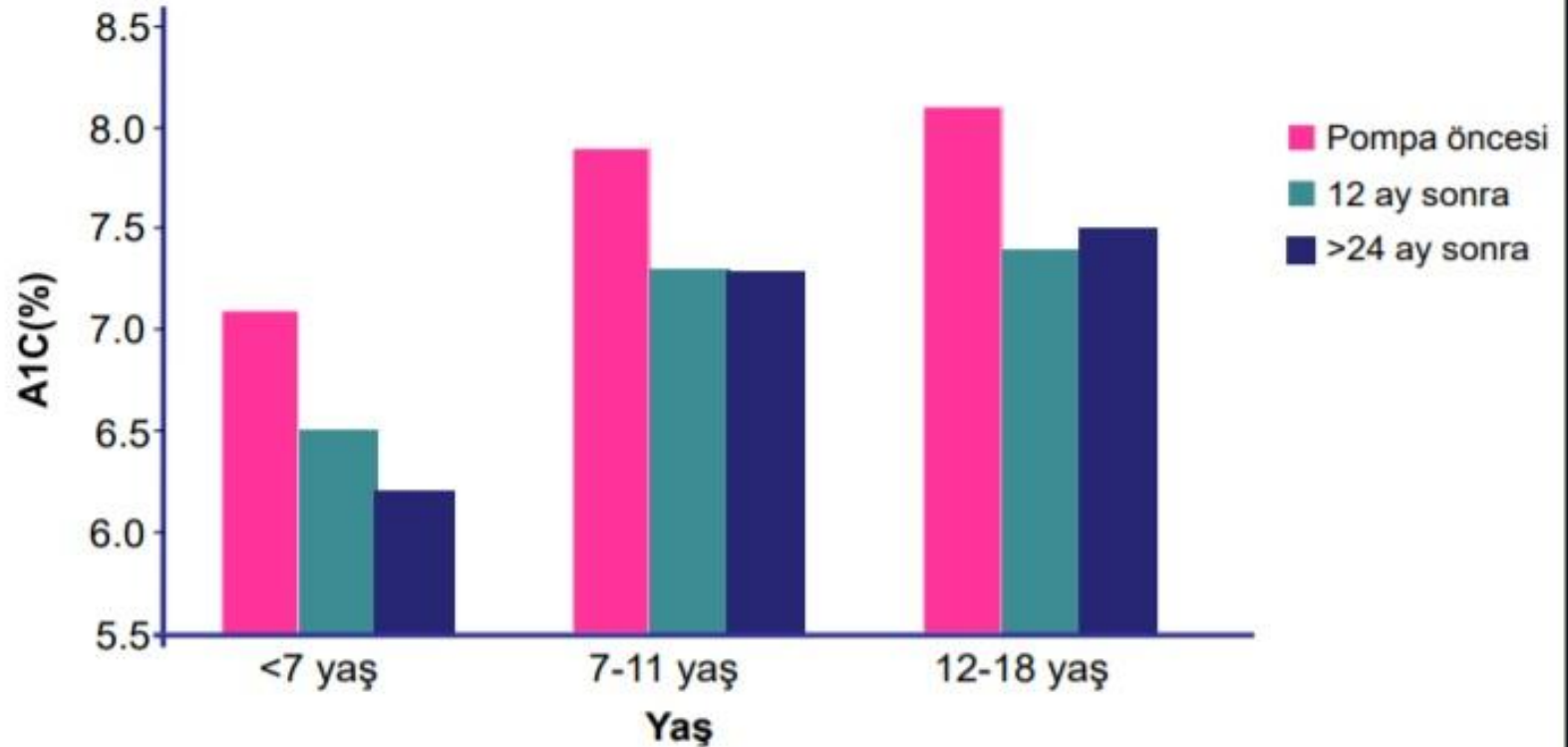
HbA1c'de **0.2-1.1%** puanlık düşüş 😊

Pompa kullanımıyla metabolik kontrolde iyileşme her yaşta görülüyor

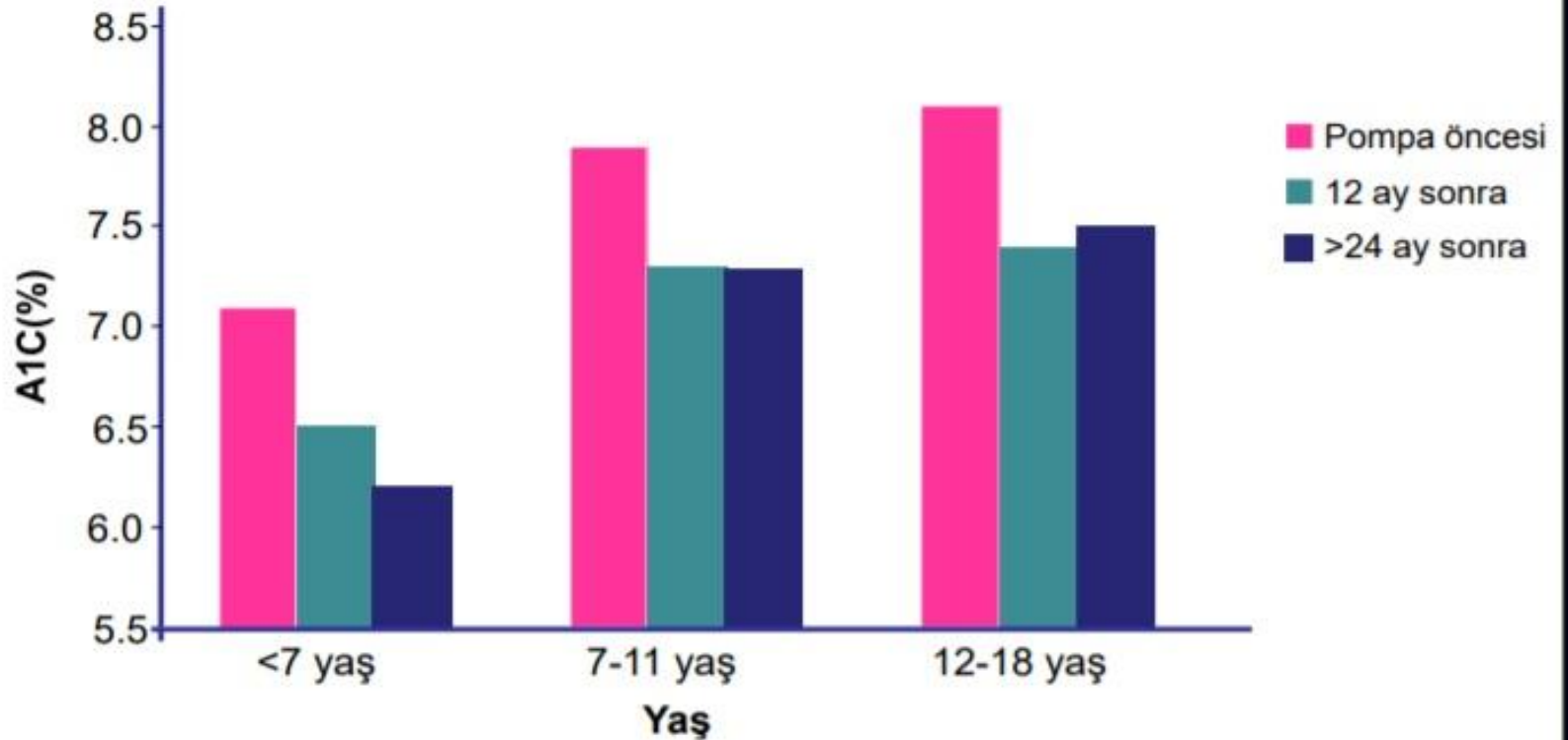
Insülin dozunda azalma

Hipoglisemi sıklığında azalma (özellikle sensörlü pompalar)

SCIİ ile daha iyi glisemik kontrol



Ađır hipoglisemi riski daha dűşűk



Neden pompa?

Çünkü, daha az komplikasyon

- Retinopati ve nöropati sıklığı pompa kullananlarda anlamlı olarak düşük (%17 vs %22, %27 vs %33)



RESEARCH ARTICLE

Insulin Pump Therapy Is Associated with Lower Rates of Retinopathy and Peripheral Nerve Abnormality

Bedowra Zabeen^{1,2}, Maria E. Craig^{1,3,4}, Shaib A. Virk^{1,3}, Alison Pryke¹, Albert K. F. Chan¹, Yoon Hi Cho^{1,4}, Paul Z. Benitez-Aguirre^{1,4}, Stephen Hing⁵, Kim C. Donaghue^{1,4*}

1 Institute of Endocrinology and Diabetes, The Children's Hospital at Westmead, Sydney, New South Wales, Australia, 2 Department of Paediatrics & Changing Diabetes in Children Program, Bangladeshi Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders, Dhaka, Bangladesh, 3 School of Women's and Children's Health, University of New South Wales, Sydney, New South Wales, Australia, 4 Discipline of Paediatrics and Child Health, University of Sydney, Sydney, New South Wales, Australia, 5 Ophthalmology Department, The Children's Hospital at Westmead, Sydney, New South Wales, Australia

* kim.donaghue@health.nsw.gov.au



Neden pompa?

Çünkü, pompayla yaşam daha kolay

Esneklik artıyor

Yaşam kalitesinde
ve memnuniyet
oranında artış

*Pediatric Diabetes 2007; 8: 377-383
All rights reserved*

*© 2007 The Authors
Journal compilation © 2007 Blackwell Munksgaard*

Pediatric Diabetes

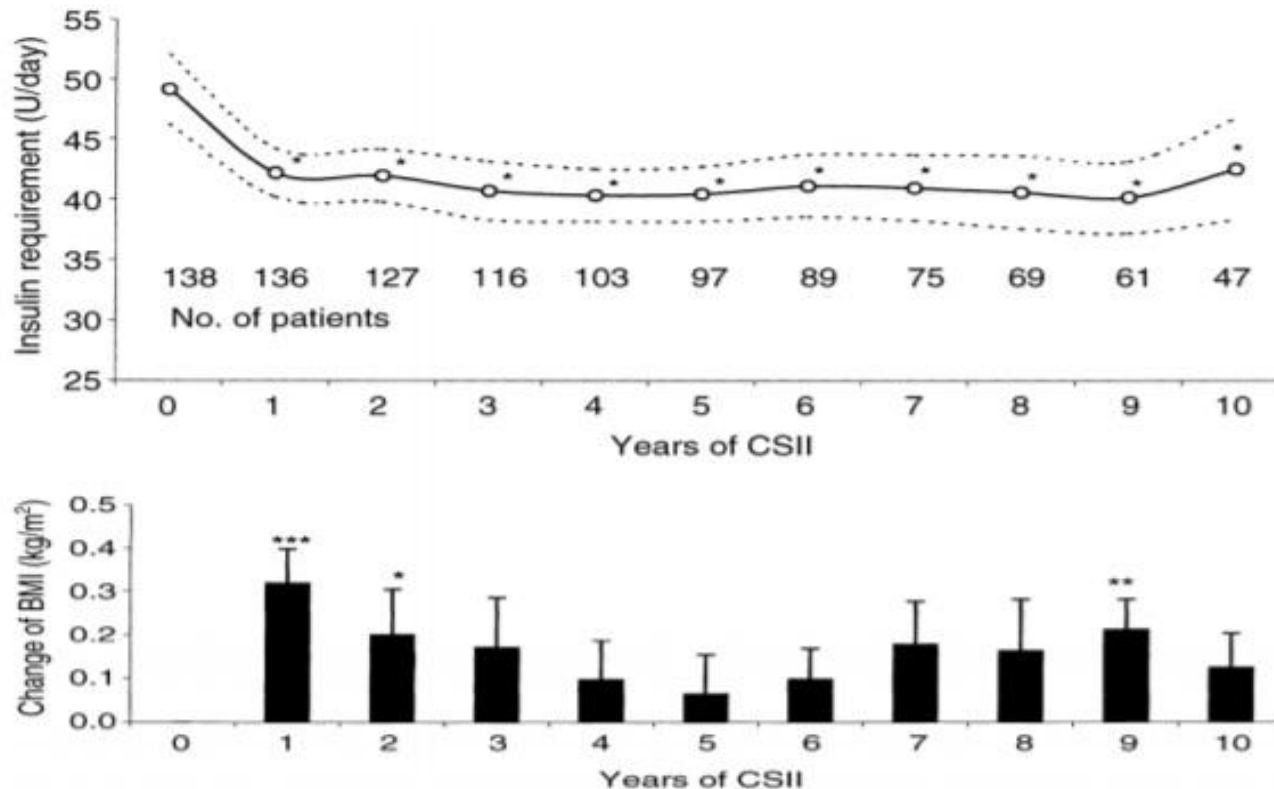
Original Article

Continuous subcutaneous insulin infusion benefits quality of life in preschool-age children with type 1 diabetes mellitus

Opipari-Arrigan L, Fredericks EM, Burkhardt N, Dale L, Hodge M, Foster C. Continuous subcutaneous insulin infusion benefits quality of life in preschool-age children with type 1 diabetes mellitus. *Pediatric Diabetes 2007; 8: 377-383.*

Lisa Opipari-Arrigan^a,
Emily M Fredericks^a,
Nugget Burkhardt^b,
Linda Dale^b,

SCIİ daha az kilo alımına neden olur



Pompa Tedavisinin Bilimsel Destekleri

Insulin Pump Therapy

A meta-analysis

JILL WEISSBERG-BENCHELL, PHD, CDE¹
JEANNE ANTISDEL-LOMAGLIO, PHD²
ROOPA SESHADRI, PHD¹

OBJECTIVE — To conduct a meta-analysis of the metabolic and psychosocial impact of continuous subcutaneous insulin infusion (CSII) therapy on adults, adolescents, and children.

RESEARCH DESIGN AND METHODS — Studies were identified and data regarding study design, year of publication, sample size, patient's age, diabetes duration, and duration of CSII therapy were collected. Means and SDs for glycohemoglobin, blood glucose, insulin dosages, and body weight for CSII and comparison conditions were subjected to meta-analytic procedures. Data regarding pump complications and psychosocial functioning were reviewed descriptively.

RESULTS — A total of 52 studies, consisting of 1,547 were included in the meta-analysis. Results indicate that CSII therapy is associated with significant improvements in glycemic control (decreased glycohemoglobin and mean blood glucose). A descriptive review of potential complications of CSII use (e.g., hypoglycemia, diabetic ketoacidosis [DKA], pump malfunction, and site infections) suggests a decreased frequency of hypoglycemic episodes but an increased frequency of DKA in studies published before 1993.

CONCLUSIONS — CSII therapy is associated with improved glycemic control compared with traditional insulin therapies (conventional therapy and multiple daily injections) and does not appear to be associated with significant adverse outcomes. Additional studies are needed to further examine the relative risks of CSII therapy, including the potential psychosocial impact of this technologically advanced therapy.

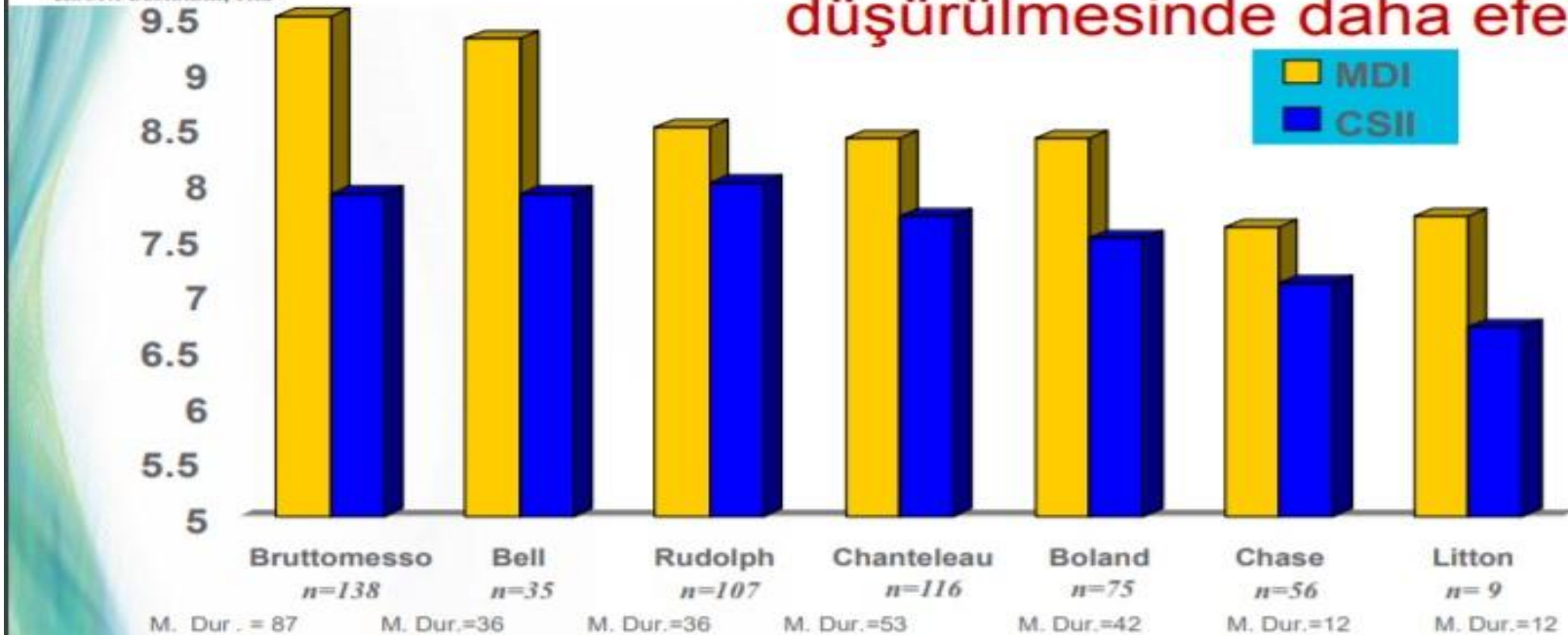
Pompa Tedavisinin Bilimsel Destekleri

Insulin Pump Therapy

A meta-analysis

JILL WEISSBERG-BENCHELL, PHD, CDE¹
JEANNE ANTISDEL-LOMAGLIO, PHD²
ROOPA SESHADRI, PHD¹

MDI(Çoklu insülin tedavisi) ile karşılaştırıldığında, insülin pompası HbA1c değerinin düşürülmesinde daha efektiftir.



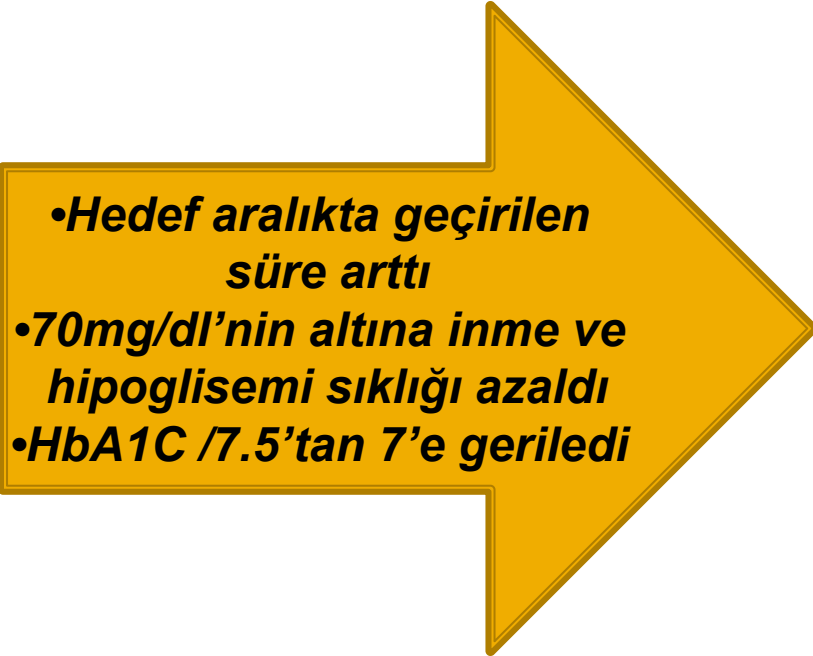
Adapted from Chantelau, E et al., Diabetologia 1989, 32:421-6. Bode, BW et al., Diabetes Care 1996, 19:324-7. Boland, EA et al., Diabetes Care 1999, 22:1779-84. Bell, DSH et al., Endocrine Practice 2000, 6:357-60. Chase HP, et al., Pediatrics 2001, 107:351-6. Bruttomesso D. et al., Diabetic Medicine 2002;19:628-624. Litton J, et al. J pediatr 2002; 141-495. Rudolph, JW, Hirsch, IB. Assessment of Therapy with CSII in an Academic Diabetes Clinic. Endocrine Practice 2002; 8: 401-405.

MiniMed™ 780G Insulin pump system with smartphone connectivity for the treatment of type 1 diabetes: overview of its safety and efficacy

Jennifer McVean & Joshua Miller

To cite this article: Jennifer McVean & Joshua Miller (2021) MiniMed™ 780G Insulin pump system with smartphone connectivity for the treatment of type 1 diabetes: overview of its safety and efficacy, Expert Review of Medical Devices, 18:6, 499-504, DOI: [10.1080/17434440.2021.1926984](https://doi.org/10.1080/17434440.2021.1926984)

To link to this article: <https://doi.org/10.1080/17434440.2021.1926984>

- 
- **Hedef aralıkta geçirilen süre arttı**
 - **70mg/dl'nin altına inme ve hipoglisemi sıklığı azaldı**
 - **HbA1C /7.5'tan 7'e geriledi**

Time in Range increased from 68.8% at baseline to 74.5% at study end. TIR was higher for participants using a set point of 100 mg/dL (5.6 mmol/L) versus 120 mg/dL (6.7 mmol/L). Additionally, TIR was also higher for those with shorter active insulin times (AIT). With shorter AIT, autocorrection boluses are more aggressive contributing to the increased TIR. As AIT and setpoint were decreased, TIR increased. The highest TIR of 78.8% was seen in the group with an AIT of 2 hours and a set point of 100 mg/dL (5.6 mmol/L). In comparison, those with a setpoint of 120 mg/dL (5.6 mmol/L) and an AIT of 2 hours had a TIR of 75%.

Time Below Range decreased from 2.5% below 70 mg/dL (3.9 mmol/L) at baseline to 1.8% below 70 mg/dL (3.9 mmol/L) at study end and 0.8% below 54 mg/dL (3.0 mmol/L) at baseline to 0.5% below 54 mg/dL (3.0 mmol/L) at study end.

Adolescents' TIR increased from 62.4% at baseline to 72.7% at study end while adults' TIR increased from 70.9% at baseline to 75.1% at study end.

HbA1c decreased from 7.5% at baseline to 7% at study end. Additionally, the percentage of study participants meeting the target HbA1c of <7% increased from 34% at baseline to 61% at study end.

Diyabetin Yönetiminde Teknolojinin Evrimi

Diyabet için çözümler

● Kapalı Devre

2010 ● Düşük Duraklatma

REAL-Time CGM

2005 ●

1999 ● Glikoz Sensör

1978 ●

Glikometreler 1977 ●

İnsülin Enjeksiyonu 1922 ●

Urin Test Stripleri 1900s ●

Urin Test 1776 ●

1980s



İnsülin pompa Tedavisi